Comparing Growth and Survival Kinetics of Persistent and Sporadic Strains of *Listeria monocytogenes* from *Alheira* Sausage

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MOTIVATION

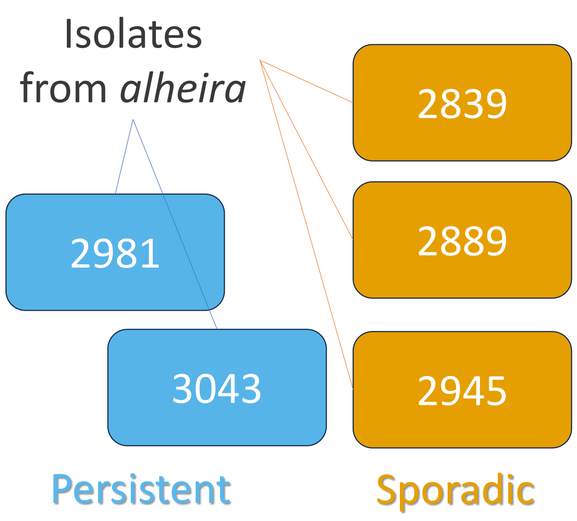
L. monocytogenes is known to persist in food processing environments, with some strains being routinely isolated (**persistent**), while others are only occasionally found (**sporadic**). This raises the question:

Are persistent strains more resistant to stress conditions compared to sporadic strains from similar sources?

OBJECTIVE

To investigate the effect of food processing related stresses (pH=6 and 8% NaCl) on the behaviour of *L. monocytogenes* isolates from *alheira* sausage, compared to a set of reference conditions (37 °C, 0% NaCl, pH=7).

METHODOLOGY



1. Collection of Isolates

2. Incubation and OD monitoring (600 nm) at three conditions:

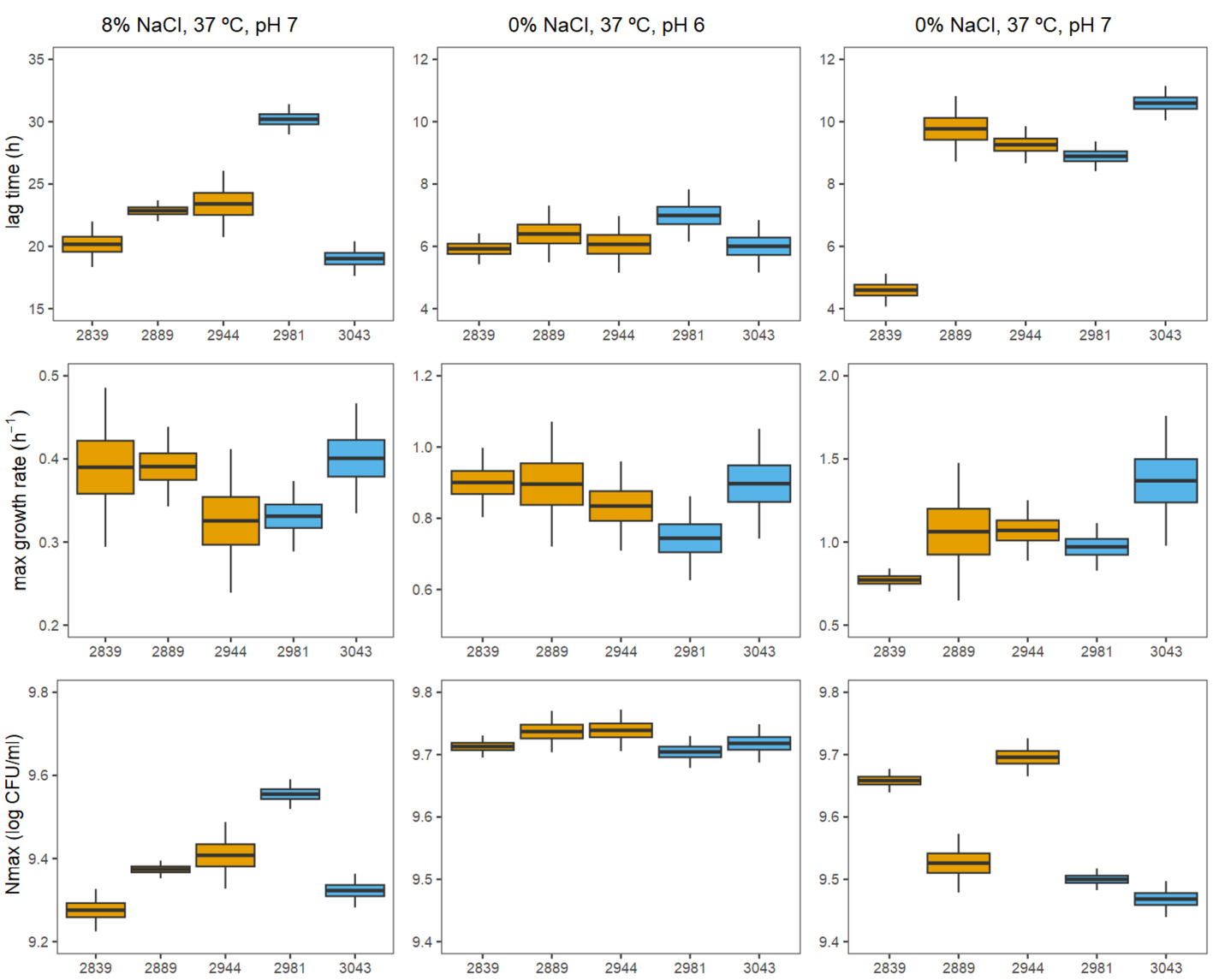
T (°C)	pH	NaCl (%)	Condition
37	7	0	Reference
37	6	0	Low pH
37	7	8	High salinity

Experimental data fitted to the model of Baranyi and Roberts (*baranyi* function from the "nlsMicrobio" package in Rstudio)

3. Model Fitting

RESULTS

High Salinity | Low pH | Reference



Compared to the reference conditions:

- High salinity conditions → significantly longer lag times and lower μ_{max} for all isolates
- Low pH (pH = 6) reduced μ_{max} but also shortened the lag phase for most isolates
- These sub-optimal conditions were insufficient to promote pathogen decay

The **persistent** strains **#2981** and **#3048** do not exhibit a particular behavior nor appear to have increased resistance against the conditions tested

This result is aligned with recent research [1]

CONCLUSIONS

No significant differences were found between persistent and sporadic strains, suggesting that persistence events may not be explained by a better aptitude for growth.

However, further research with a larger number of isolates is needed.

ACKNOWLEDGMENTS

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REFERENCES

[1] Taylor, A.J., Stasiewicz, M.J. Persistent and sporadic *Listeria monocytogenes* strains do not differ when growing at 37 °C, in planktonic state, under different food associated stresses or energy sources. *BMC Microbiol* **19**, 257 (2019)