

Survival and growth of foodborne pathogens in mung bean sprouts irrigated with contaminated water

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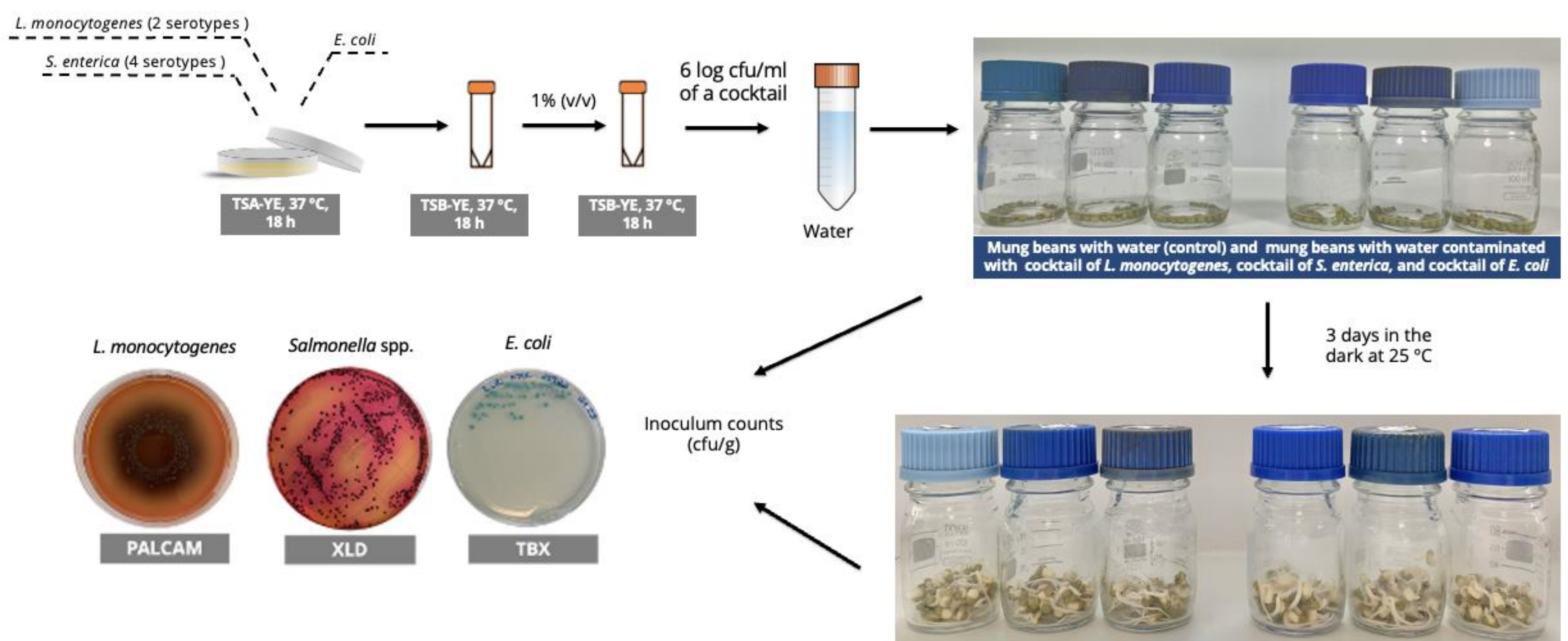
Introduction

New healthy lifestyle trends led to increased consumption of ready-to-eat vegetable products, such as leafy greens and sprouts. *Listeria monocytogenes*, *Salmonella* spp., and *Escherichia coli* are microorganisms that have been associated with outbreaks caused by the consumption of contaminated produce.¹ Once in contact with plant tissue, microorganisms can adhere and persist on plant tissues for long periods. The initial level of microorganisms can significantly influence their survival, spread, and persistence within plant tissues.²

Objective

This study aimed to assess the risk associated with using irrigation water contaminated with *L. monocytogenes*, *Salmonella enterica*, and *Escherichia coli* in sprout production.

Methods



Results

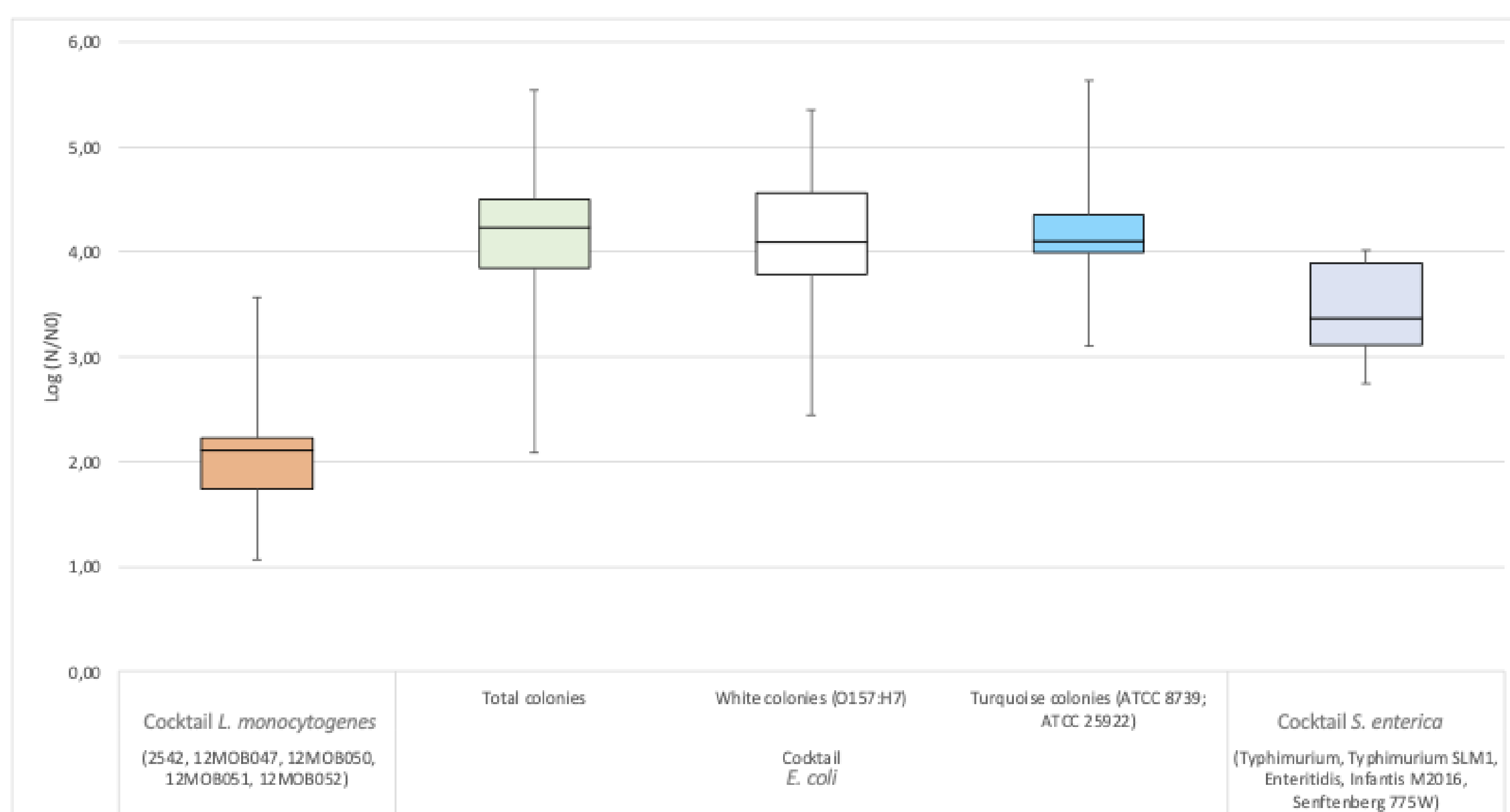


Figure 1. Growth of *L. monocytogenes*, *E. coli*, and *S. enterica* in germinated mung beans. The values of log (N/N0) from three trials are represented. Sprouts were harvested 3 days after germination.

Discussion and conclusions

- After 3 days of germination, counts increased approximately 2 log CFU/g for *L. monocytogenes*, 4 log CFU/g for *E. coli* and 3 log CFU/g for *S. enterica*.
- These preliminary results have shown that when irrigation water is contaminated with *L. monocytogenes*, *E. coli*, or *S. enterica*, these pathogens can survive and multiply in mung bean sprout tissues.
- Future studies will focus on the impact of lower initial contamination levels as well as evaluating pathogen behaviour in other edible plant tissues.

Significance

- The ability of these foodborne pathogens to survive and multiply in sprouts presents a significant risk to public health, as sprouts are typically consumed raw and provide ideal conditions for pathogen growth.

References

1. Thomas et al. (2024). From field to plate: How do bacterial enteric pathogens interact with ready-to-eat fruit and vegetables, causing disease outbreaks?. *Food Microbiology*, 117, 104389. <https://doi.org/10.1016/j.fm.2023.104389>.
2. Alegbeleye et al. (2018). Sources and contamination routes of microbial pathogens to fresh produce during field cultivation: A review. *Food Microbiology*, 73, 177-208. <https://doi.org/10.1016/j.fm.2018.01.003>.

Acknowledgements

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