

Risk associated with water contaminated with *Listeria monocytogenes* and used for irrigation of sprouts

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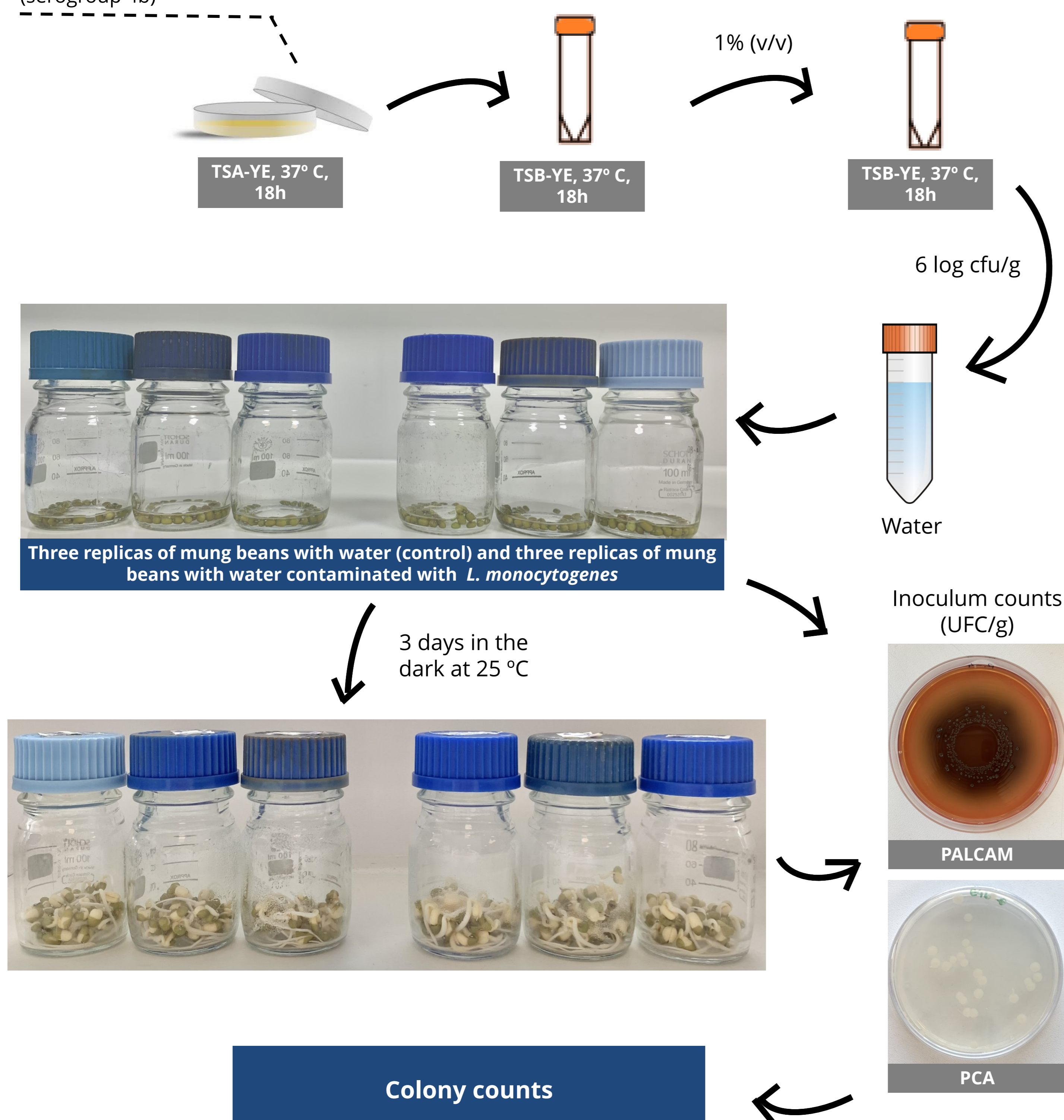
PORTO

Introduction

Listeria monocytogenes is a foodborne pathogen that has been associated with outbreaks of listeriosis caused by the consumption of contaminated vegetables [1]. Once in contact with plant tissue, the bacteria can adhere and persist for a significant period of time. Moreover, the quantity of cells can influence their dissemination and survival within plants [2].

Methods

Listeria monocytogenes 2542 (serogroup 4b)



Objectives

The aim of this work was to assess the risk associated with water contaminated with *L. monocytogenes*, which is utilized for the irrigation of sprouts.

Results

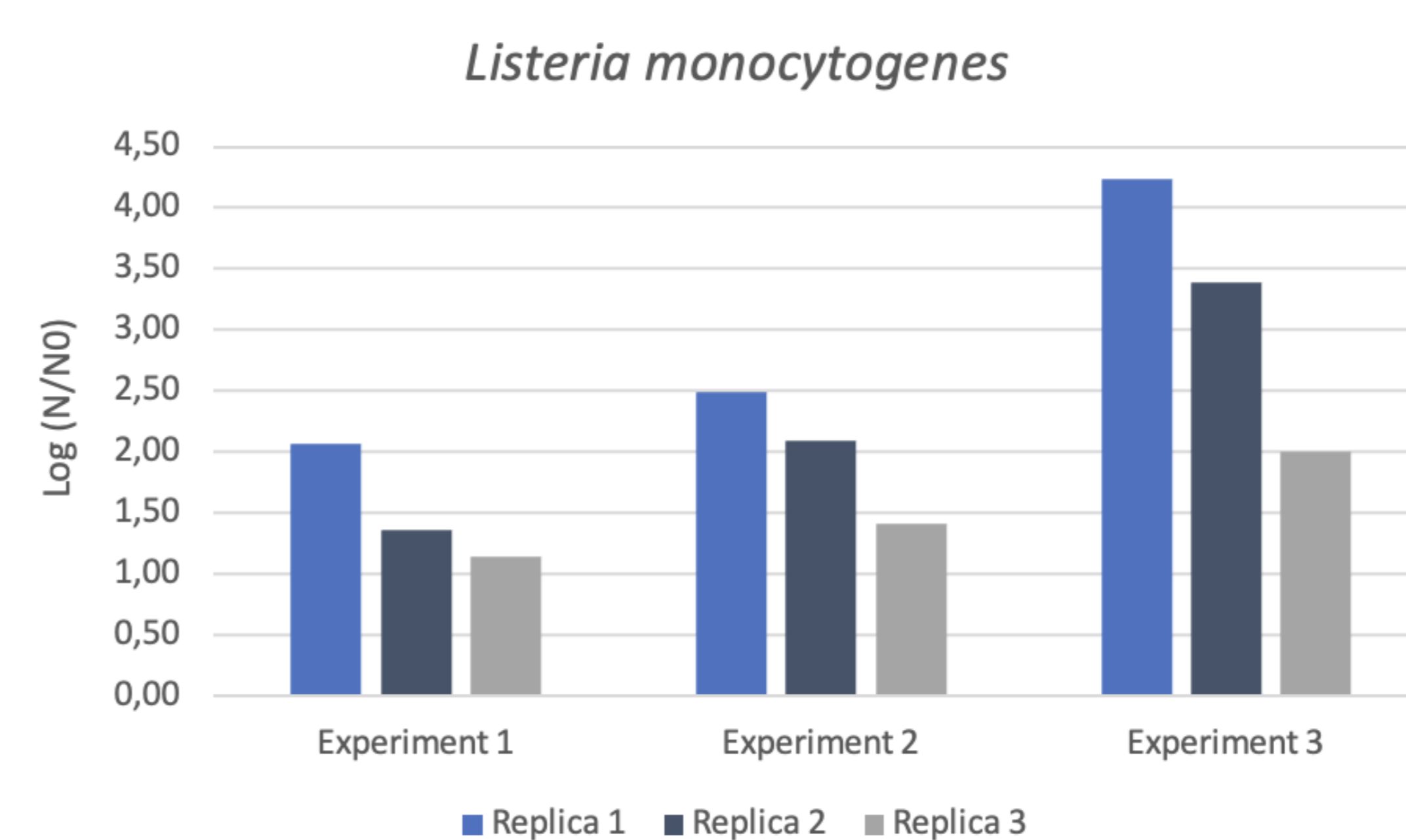


Figure 1. Counts of *Listeria monocytogenes* in sprouts of mung beans after water contamination

After 3 days of germination, a growth of *L. monocytogenes* between 1 to 4 log cfu/g was observed. Due to the use of biological material, the variability is high.

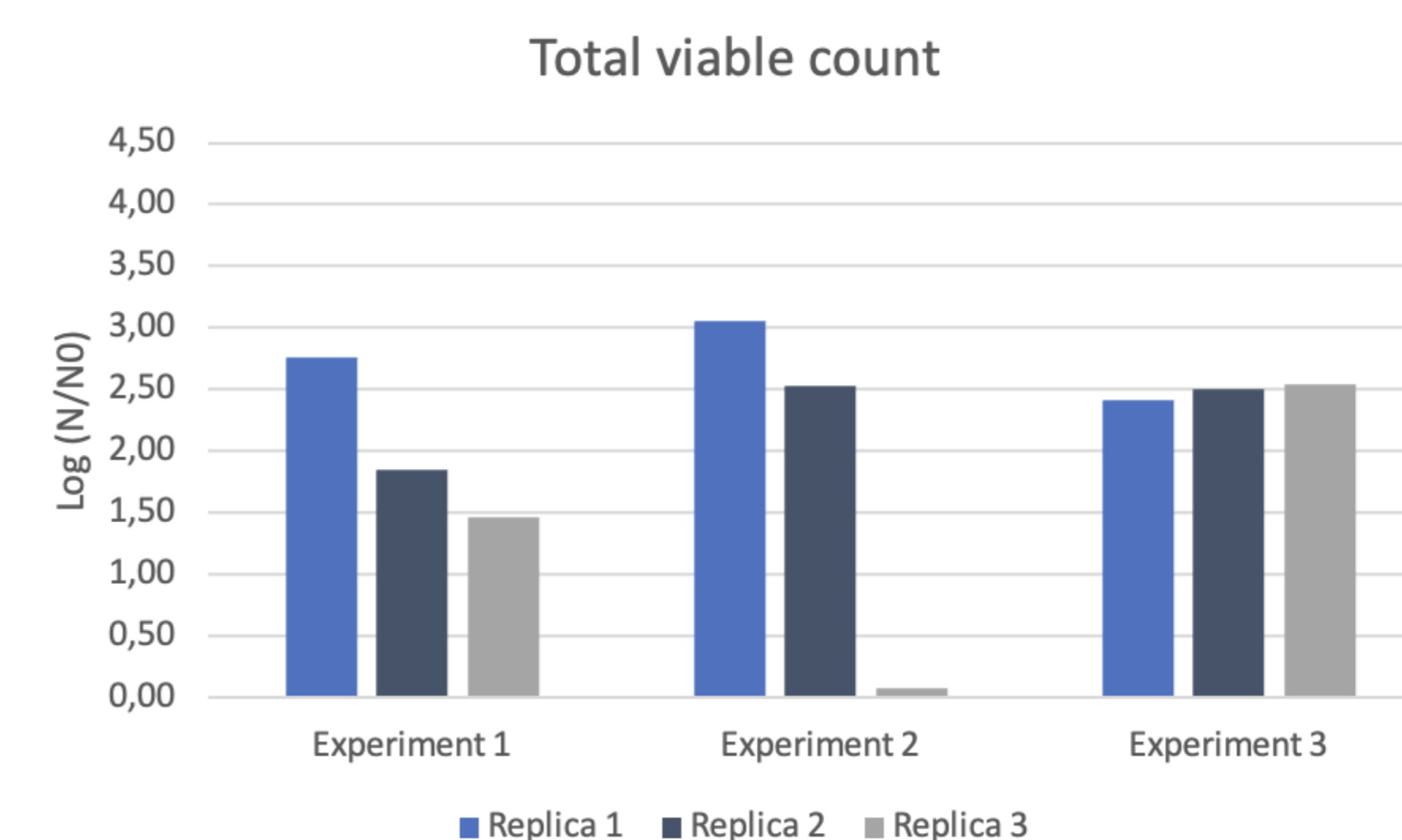


Figure 2. Total viable count of microorganisms in sprouts of mung beans after water contamination

After 3 days of germination, a growth of total viable microorganisms until about 3 log cfu/g was observed. Due to the use of biological material and to the likely presence of endophytic bacteria, the variability is high.

Conclusions

- When irrigation water becomes contaminated with *L. monocytogenes*, this pathogen is capable of surviving and multiplying within plant tissue, posing a risk to public health as it may be consumed raw.
- Future studies will include using lower levels of contamination to ascertain whether similar behavior is observed. Additionally, the behavior of other pathogens in both this particular edible plant and others will be evaluated.

References

- 1] Cunha et al. Characterization of clinical and food *Listeria monocytogenes* isolates with different antibiotic resistance patterns through simulated gastrointestinal tract conditions and environmental stresses. *Microbial Risk Analysis* 2016, 1: 40-46.
- 2] Culliney P. and Schmalenberger A. Cultivation Conditions of Spinach and Rocket Influence Epiphytic Growth of *Listeria monocytogenes*. *Foods* 2022, 11: 3056.

Acknowledgements

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