

Survival of bacteriocinogenic cultures of lactic acid bacteria on organic substrate

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Introduction

Food-borne pathogens can be introduced into the soil through various sources of contamination: the use of animal faecal matter as fertiliser, irrigation water, poor or naturally occurring agricultural practices [1]. Thus, soil is a potential source of contamination and transmission to the food produced here. Foodborne pathogens can cause foodborne illness, especially through consumption of these ready-to-eat products [2]. Scientific literature has highlighted the ability of lactic acid bacteria (LAB) (e.g. *Pediococcus acidilactici* HA-6111-2, *Lactiplantibacillus plantarum* R23 and *Pediococcus pentosaceus* DT016) to produce antimicrobial compounds against pathogens present in various foods [3]. In order to reduce the potential contamination of these foods, the use of LABs has emerged as a potential strategy for biocontrol of foodborne pathogens [4].

Objectives

The main objective of this work was to evaluate the survival of three bacteriocin-producing LABs against *Listeria monocytogenes* and to understand the interaction in organic substrate between the potentially protective culture and the pathogen.

Results

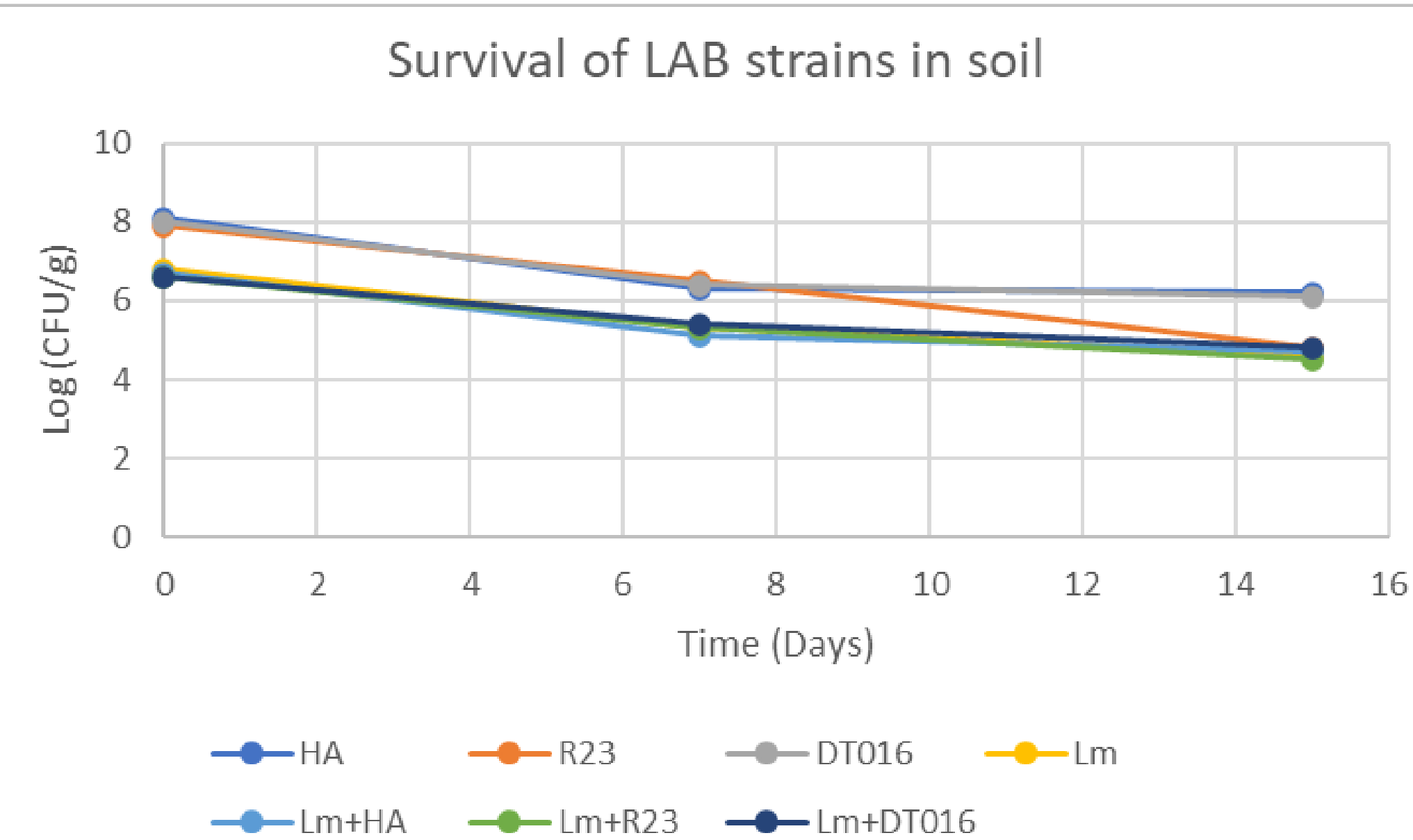


Figure 1. Survival of LAB in soil and interaction of each LAB strain with a mix of seven *L. monocytogenes*

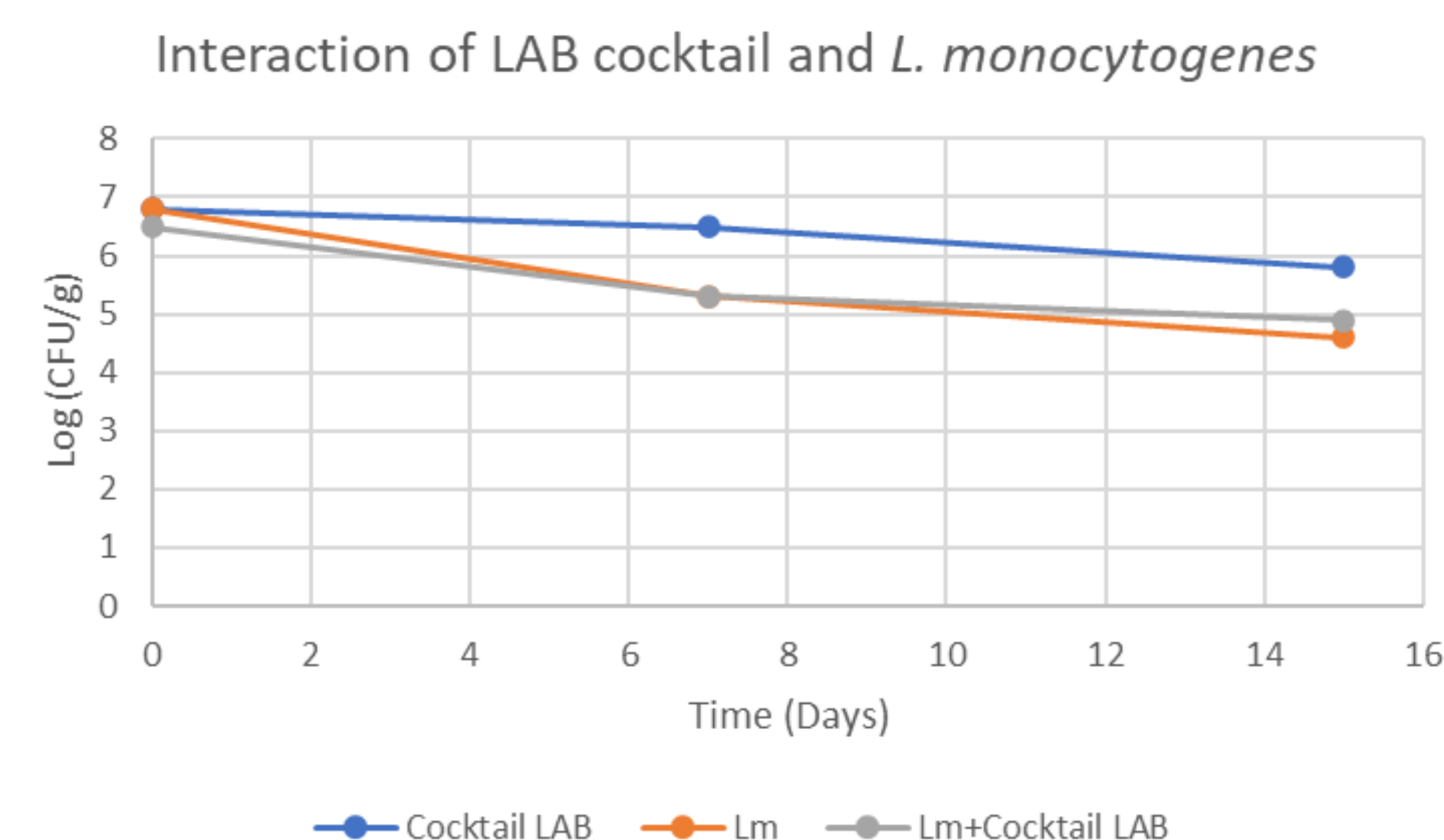


Figure 2. Interaction between LAB cocktail and mix of seven strains of *L. monocytogenes*

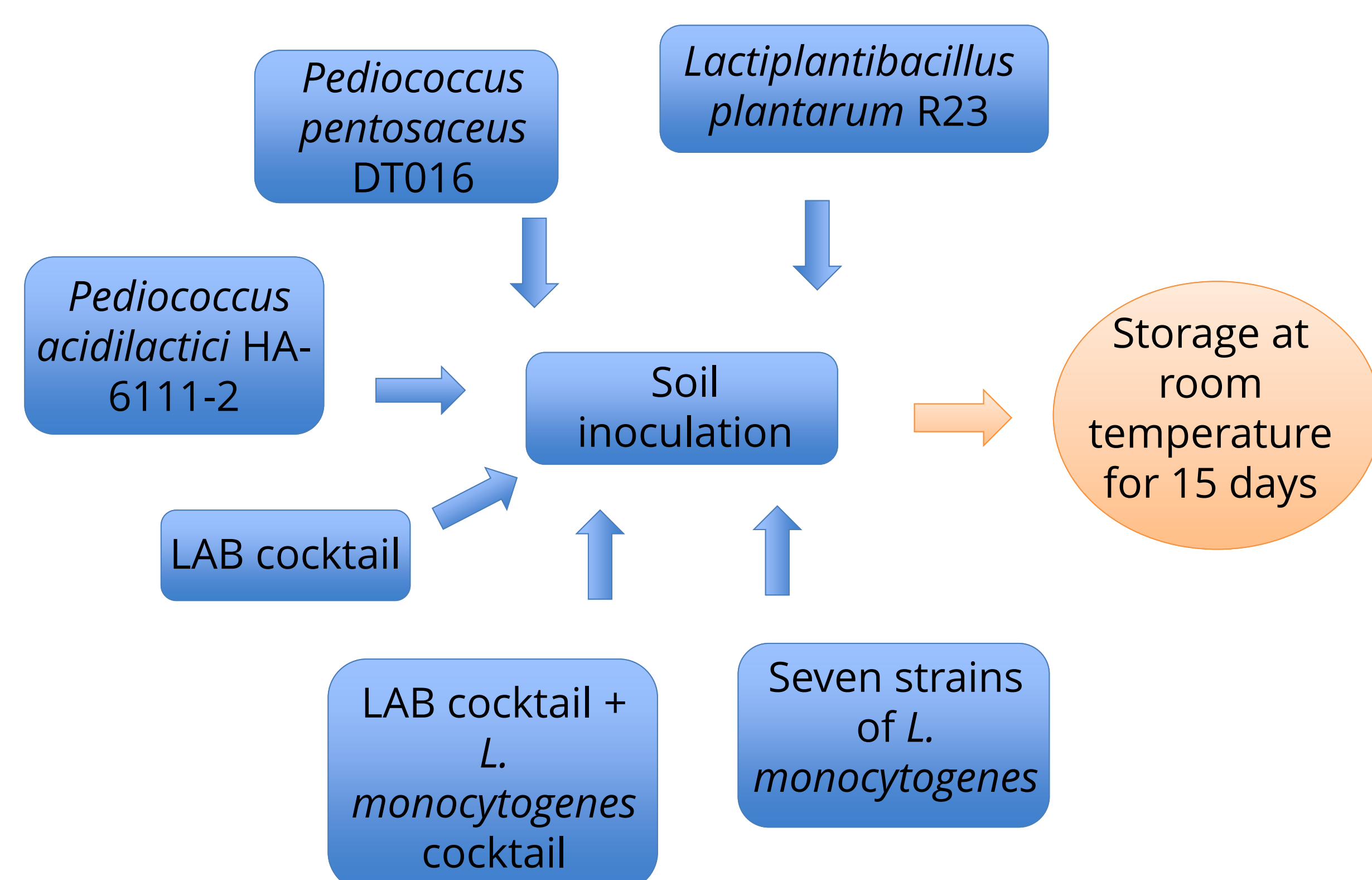
Conclusions

-After 15 days of storage at room temperature, *P. acidilactici* HA-6111-2, *Lpb. plantarum* R23 and *P. pentosaceus* DT016 survived on organic substrate. However, none of the three species (alone or together) was able to inhibit the growth of the pathogen when compared to the control (organic substrate inoculated with *L. monocytogenes* only).

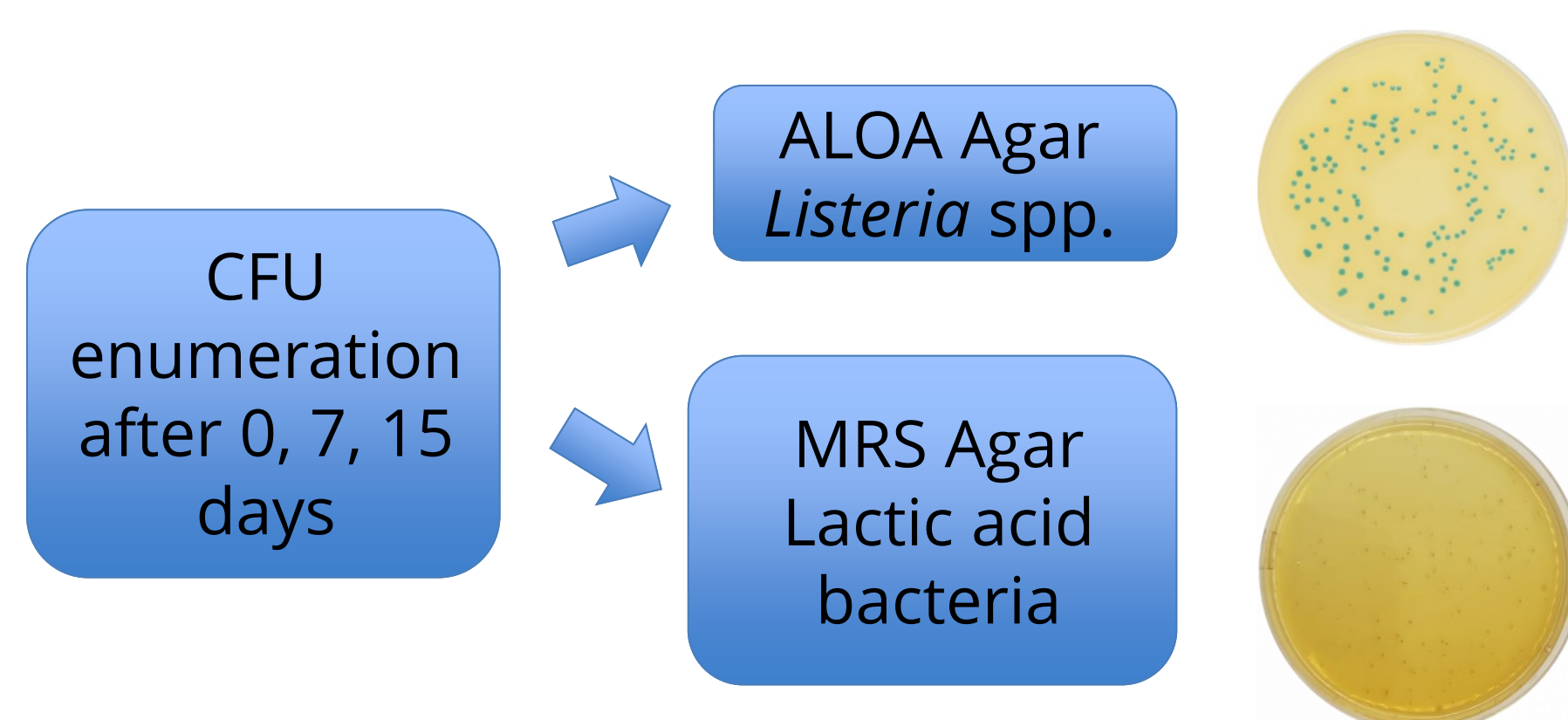
-These preliminary results point to the survival of bacteriocin-producing LABs in organic substrate. Although apparently no LABs had an inhibitory effect against *L. monocytogenes*, future trials should be performed such as germination of cultures in the organic substrate used, in order to evaluate the interaction of LABs against *L. monocytogenes* in the food itself.

Methods

1. Preparation of pathogen and LAB strains and inoculation into the soil



2. Listeria spp. and LAB enumeration



References

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