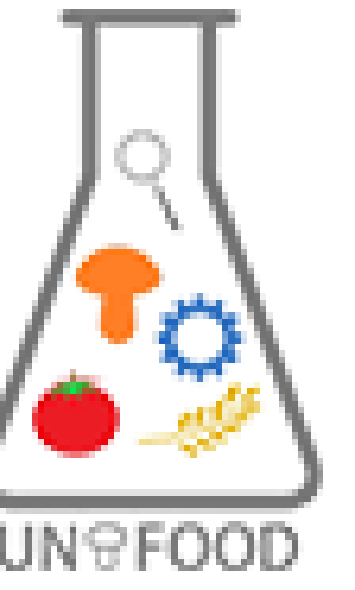
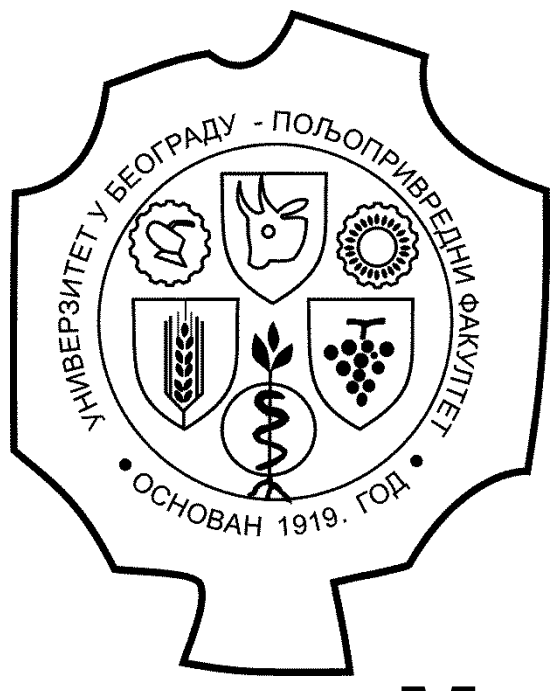


# INHIBITORY ACTIVITY OF AUTOCHTHONOUS LACTOCOCCI ON *Listeria monocytogenes* DURING THE KAJMAK STORAGE



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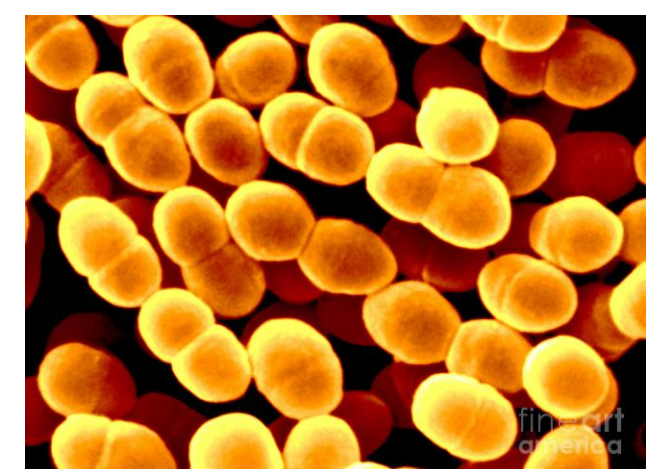
## INTRODUCTION

One of the problems in dairy industry is *Listeria monocytogenes*, which is known as an opportunistic pathogen that causes listeriosis. Autochthonous lactic acid bacteria (LAB), in addition to being used as a culture starter, can also have the ability to have an antilisterial effect, which allows them to play a dual role, as a culture starter and a protective culture at the same time. The aim of this paper is to examine the possibility of using autochthonous LAB as a protective culture with antilisterial effect in the production of kajmak.

## MATERIAL AND METHOD

In order to examine the antilisterial effect of autochthonous lactic acid bacteria *Lactococcus lactis* BGBU1-4 and *Lactococcus lactis* spp. *cremoris* PFMI565, the following variants of kajmak were prepared at different concentrations of *Listeria monocytogenes* ATCC19111 ( $10^3$ ,  $10^4$ ,  $10^5$  cfu/ml):

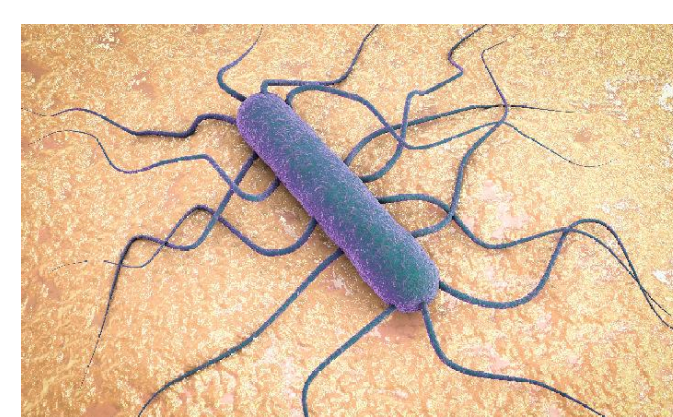
- A1- inoculated with *Listeria monocytogenes* ATCC19111;
- A2- inoculated with *L. monocytogenes* with the addition of autochthonous *Lactococcus lactis* BGBU1-4
- A3- inoculated with *L. monocytogenes* with the addition of autochthonous *Lactococcus lactis* spp. *cremoris* PFMI565.



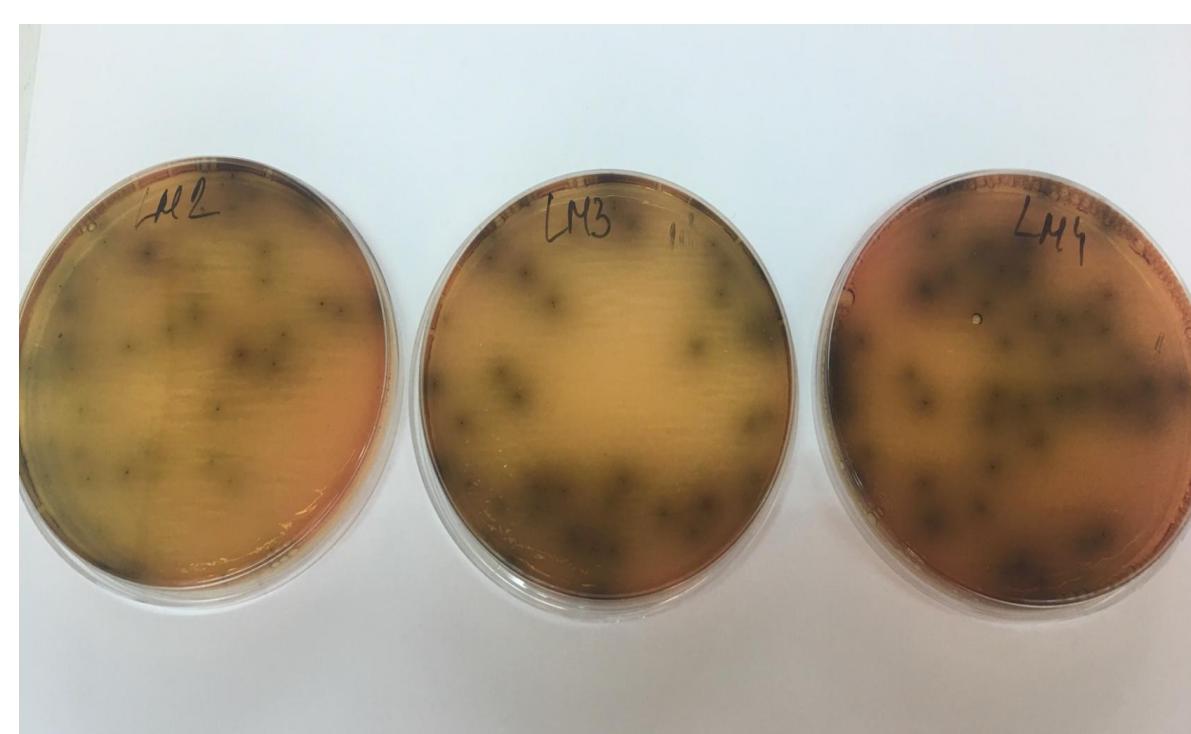
*L. lactis* BGBU1-4  
*L. lactis* spp. *cremoris* PFMI565



*L. monocytogenes* in concentration  
 $10^3$ ,  $10^4$  and  $10^5$  cfu/g



## MICROBIOLOGICAL ANALYSIS OF KAJMAK



The number of *L. monocytogenes* was monitored on Palcam agar (Merck, Germany) in 0., 7., 14., 21. and 28. day.

Figure 1. Colonies of *L. monocytogenes* on Palcam agar

## CONCLUSION

The results showed that in variant with *L. monocytogenes* (LM3, LM4, LM5) the number were maintained, while in variants with added autochthonous strains (BGBU14-LM3, LM4, LM5, PFMI565-LM3, LM4, LM5), number slightly decreased during 7 days. However, from 14. to 28. day, amount of *L. monocytogenes* was significantly reduced in variants with added autochthonous strains. Among these variants better results were detected at concentrations  $10^3$  and  $10^4$  cfu/ml of *L. monocytogenes* and the number was reduced to 1.54-1.38 log cfu/g and 2-1.55 log cfu/g, respectively. In the variants at concentration of  $10^5$  cfu/ml of *L. monocytogenes*, added autochthonous strains slower decreased the number achieving 2.38-2.77 log cfu/g.

It could be concluded that the addition of autochthonous strains showed a great antilisterial effect, especially in the lower concentrations of *L. monocytogenes* and in the later period of kajmak storage.

## RESULTS AND DISCUSSION

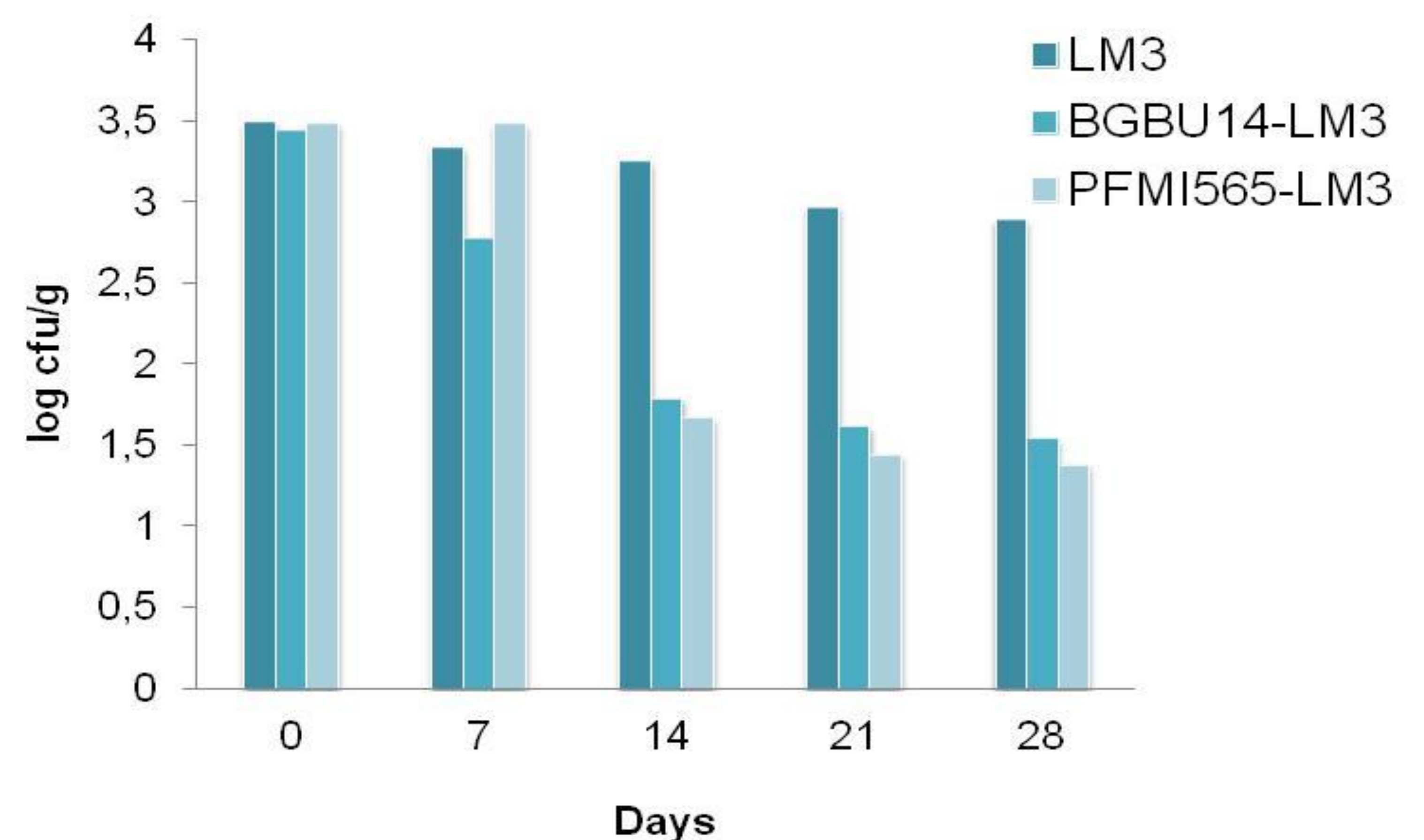


Figure 1. Number of *L. monocytogenes* in concentration  $10^3$  cfu/g in kajmak during storage

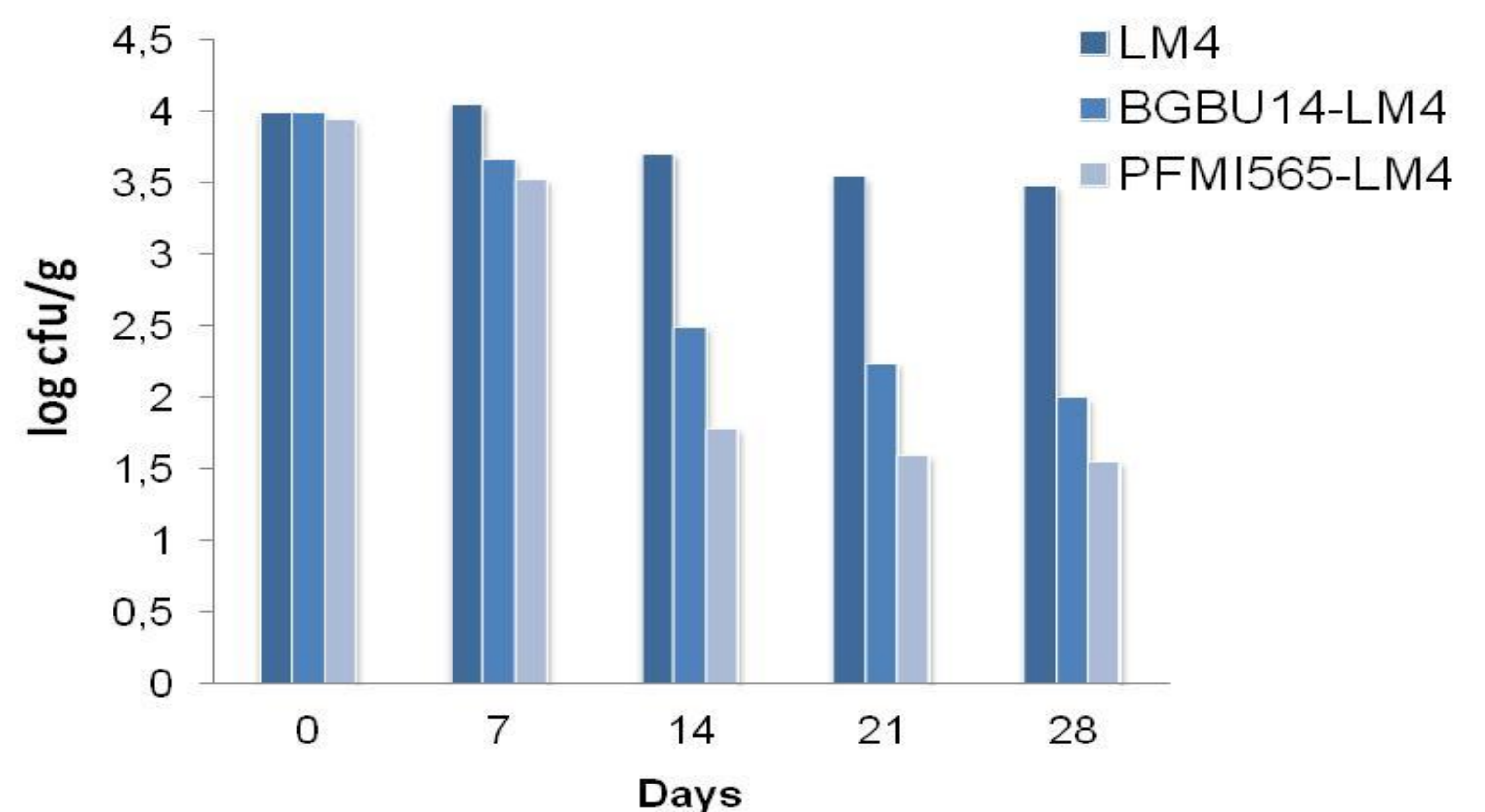


Figure 2. Number of *L. monocytogenes* in concentration  $10^4$  cfu/g in kajmak during storage

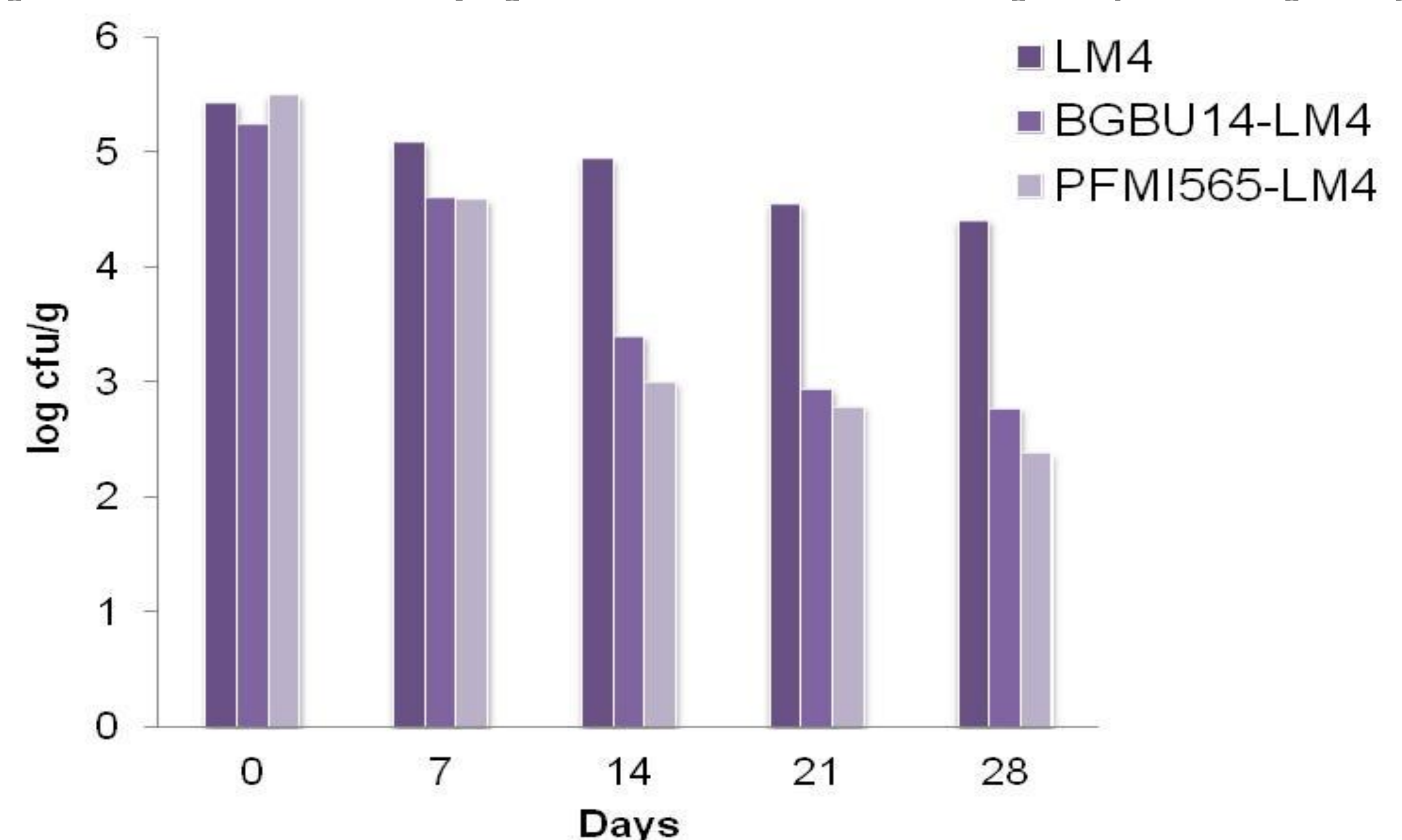


Figure 3. Number of *L. monocytogenes* in concentration  $10^5$  cfu/g in kajmak during storage