

# Production of an antilisterial medium to be used in the industry of Portuguese traditional meat products



CATOLICA  
ESCOLA SUPERIOR  
DE BIOTECNOLOGIA

Ariana Macieira, Joana Barbosa, Helena Albano, Alcina M.M.B. Morais, Paula Teixeira

PORTO

Universidade Católica Portuguesa, CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado  
Escola Superior de Biotecnologia, Rua Arquitecto Lobão Vital, Apartado 2511, 4202-401 Porto, Portugal. pteixeira@porto.ucp.pt



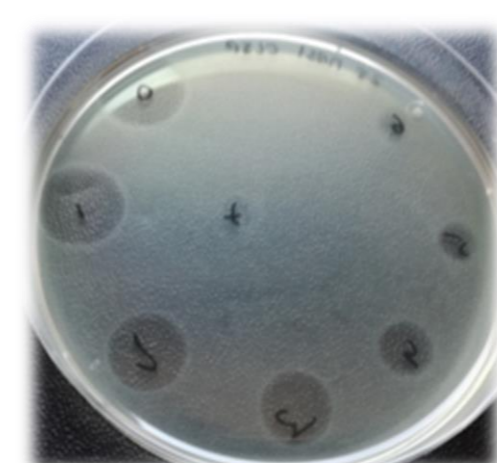
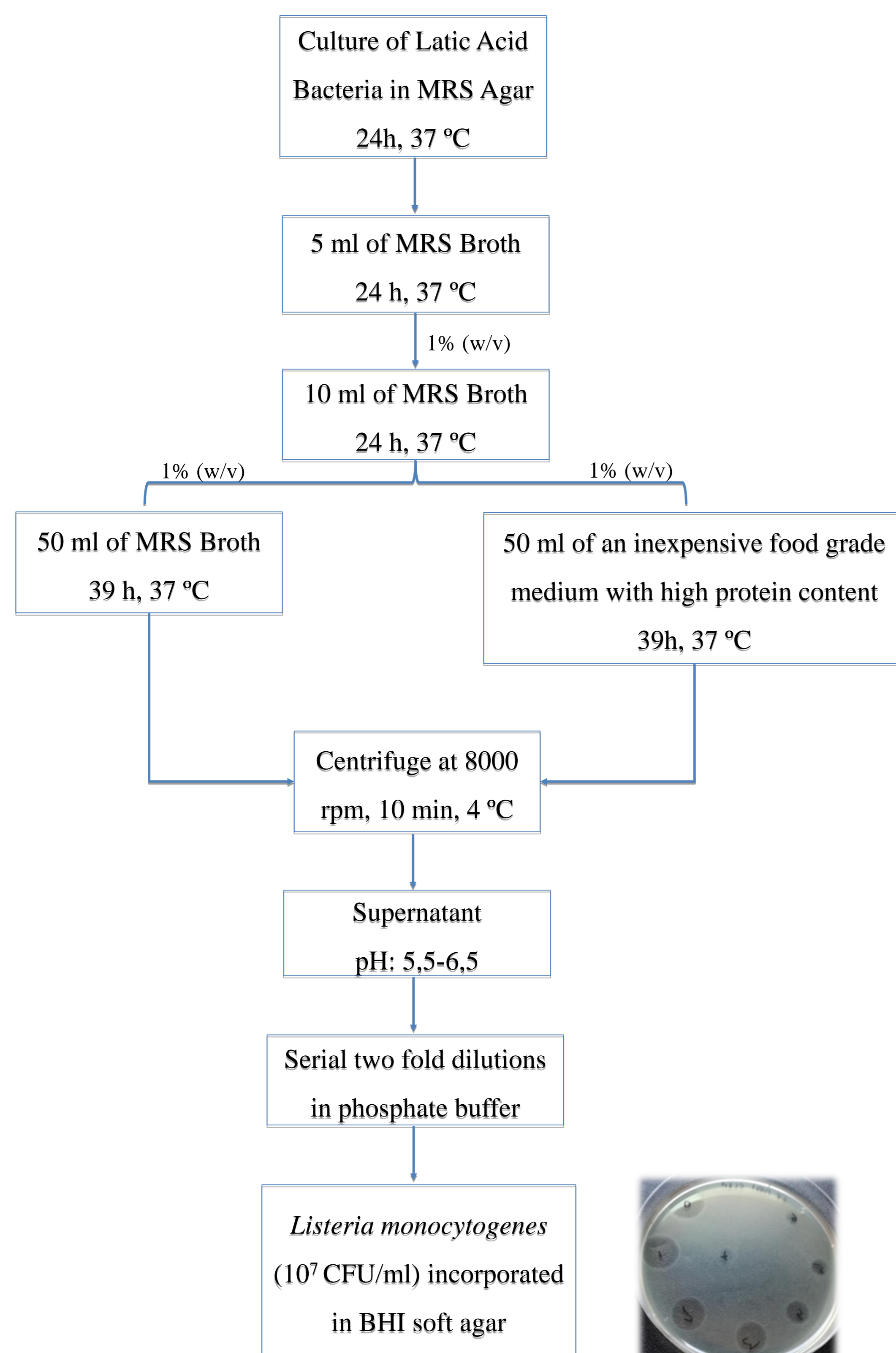
## Introduction and Objective

*Listeria monocytogenes* is a great concern in the industry of Portuguese traditional meat products. Bacteriocins, produced by lactic acid bacteria (LAB) are of great importance in order to face this concern. The reason for that is because some bacteriocins have demonstrated antimicrobial activity against *L. monocytogenes* and do not alter the organoleptic characteristics of the products (1). Although MRS broth can fill some fastidious growth requirements of many LAB, it cannot be used in the food industry, not only because it is very expensive, when used for large-scale commercial applications, but also, it contains constituents not approved in food production (2).

The objective of this study was to seek for a food grade medium that could promote growth of an autochthonous strain of *Lactobacillus* and production of bacteriocin active against *L. monocytogenes*.

## Methods

### Bacteriocin Activity Analysis



## Results

Results obtained for the bacteriocin activity analysis are present in Figure 1.

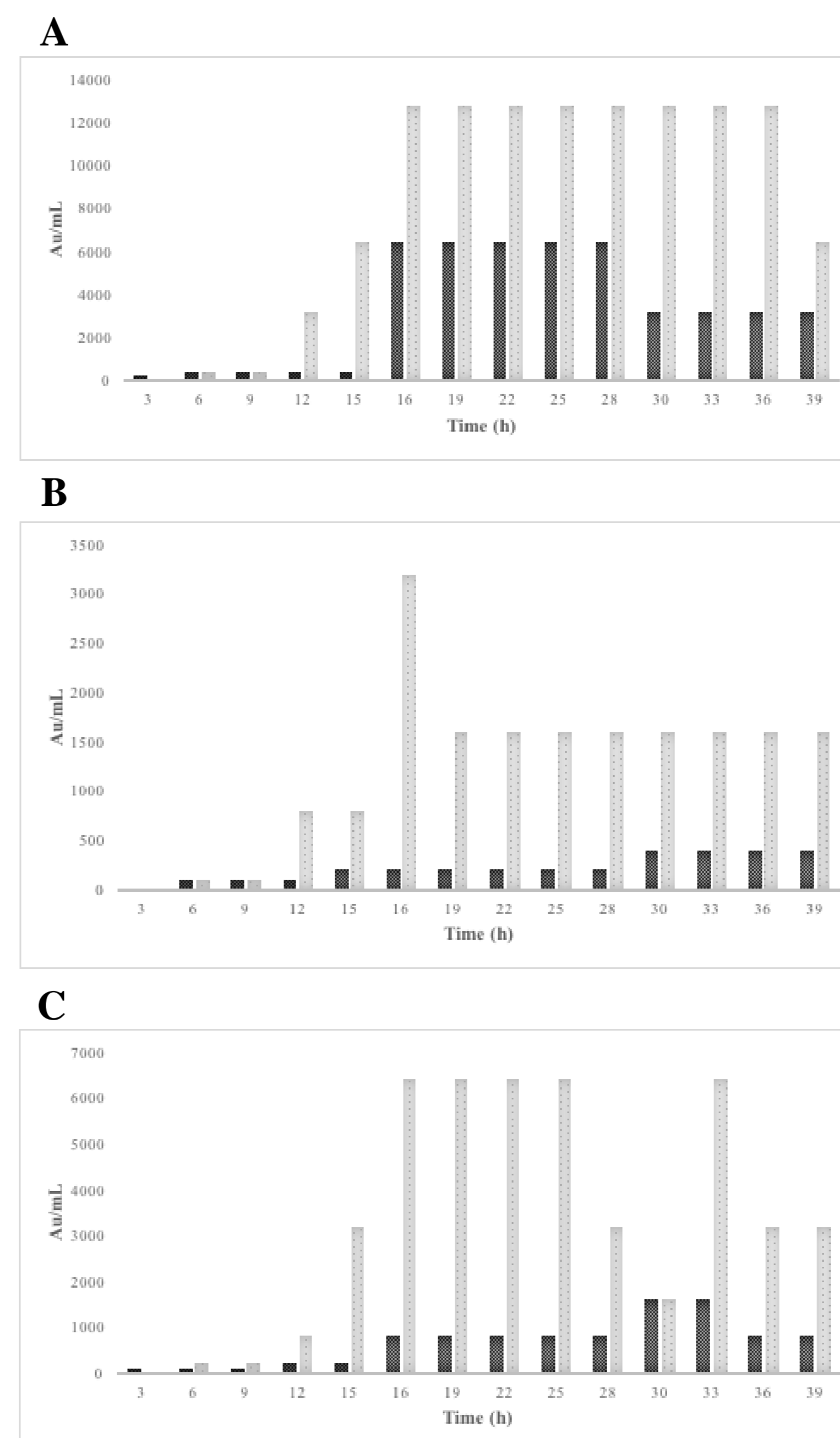


Figure 1. Bacteriocin activity for different strains of *L. monocytogenes*: (A) Scott A, (B) 3701 - isolated from meat products and (C) CLIP 80459. Bacteriocin produced in ■ Food grade medium and □ MRS Broth.

When grown in MRS, the maximum antimicrobial activity was about 12800 Au/mL and it was reached after 16-39 hours of growth. In the food grade medium the maximum antimicrobial activity was 6400 Au/mL and it was achieved after 16 and 39 hours of growth.

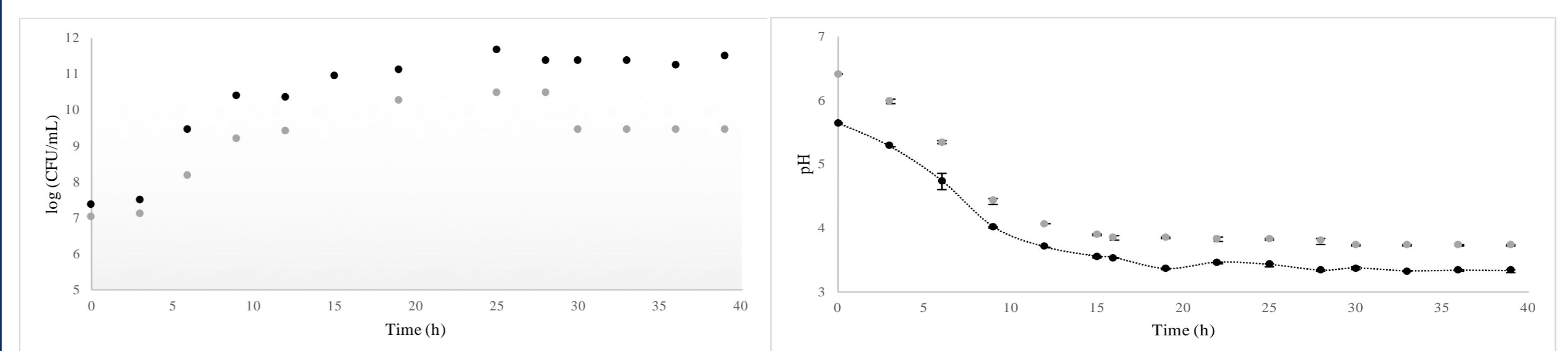


Figure 2. Growth of Lactic Acid Bacteria (*Lactobacillus*) and pH measurement in ● Food grade medium and ○ MRS Broth.

## Conclusion

For the two medium, results showed that the maximum antilisterial activity was dependent on the target strains of *L. monocytogenes*.

This food grade medium demonstrated to be a potential alternative to grow bacteriocinogenic *Lactobacillus* at industrial scale.

## References

- (1) Woraprayote, W., Malila, Y., Sorapukdee, S., Swetwathana, A., Benjakul, S., Visessanguan, W. (2016). Bacteriocins from lactic acid bacteria and their applications in meat and meat products. *Meat Science* 120: 118-132.
- (2) Balciunas, E.M., Martinez, F.A.C., Todorov, S.D., Franco, B.D.G.M., Converti, A., Oliveira, R.P.S. (2013). Novel biotechnological applications of bacteriocins: A review. *Food control* 32: 134-142.

## Acknowledgements

This work was supported through the DEM@BIOFUMADOS - Demonstrador do Biofumados - Tradição vs Qualidade - Produção de Enchidos e Fumados Tradicionais Portugueses (NORTE-01-0247-FEDER-006373), co-funded by Fundo Europeu de Desenvolvimento Regional (FEDER), under Programa Operacional Regional do Norte (PO Norte). Financial support for author J. Barbosa was provided by a post-doctoral fellowship SFRH/BPD/113303/2015 (FCT)

