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Influence of pH on the growth of an autochthonous lactic acid bacteria and bacteriocin production with antilisterial activity

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Introduction: *Listeria monocytogenes* is a great concern in the food industry. 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. MRS broth can fulfil fastidious growth requirements of most LAB, so it is used for the growth of Lactic Acid Bacteria and for bacteriocin production. It is known that pH can have some effects over the production of bacteriocins. So, the objective of this study was to investigate how the pH value could influence the growth of an autochthonous strain of *Lactobacillus* and the production of bacteriocin active against *L. monocytogenes*.

Methodology: From previous studies with different LAB, isolated from traditional meat products, an autochthonous *Lactobacillus* strain was selected since it demonstrated antimicrobial activity against *L. monocytogenes* and do not alter the organoleptic characteristics of the tested products. Bacteriocins were tested against five strains of *Listeria monocytogenes*. The selected *Lactobacillus* strain was grown in MRS broth for 21 h at 37°C in a batch reactor. Two different batches were prepared. In one pH was controlled over time (pH=6.5) and in the other one LAB growth and bacteriocin production were performed under uncontrolled pH.

Results & Conclusions: Higher bacteriocin activity was observed when LAB were grown under controlled pH. Maximum antimicrobial activity was about 12800 Au/mL for every *Listeria monocytogenes* tested, after 18 hours of LAB growth when the pH of the medium was controlled. This antimicrobial activity could be maintained, even after 20 hours of LAB growth.

Recent publications

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3. Daeschel M A, Mckeney M C, McDonald L C (1990) Bacteriocidal activity of *Lactobacillus plantarum* C-11. *Food Microbiol.* 7: 91–98.
4. Pleasants A B, Soboleva T K, Dykes G A, Jones R J, Filippov A E (2001) Modelling of the growth of populations of *Listeria monocytogenes* and a bacteriocin-producing strain of *Lactobacillus* in pure and mixed cultures. *Food Microbiology.* 18: 605-615.
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Biography

Ariana Macieira is a researcher working in Paula Teixeira's group in Universidade Católica Portuguesa, in Porto, Portugal. She has been doing some work in the field of bacteriocins production by trying to find some techniques that will improve LAB bacteriocins with application in the food industry.

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