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Potential Usage of Bacteriocinogenic Lactic Acid Bacteria Strains Obtained From Raw Goat Milk in the Control of Foodborne Pathogens

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Resumo

Goat milk presents an extremely rich and complex autochthonous microbiota, which provides a wide range of microorganisms with different characteristics that can be potentially considered for use by the dairy industry. The present work aimed to evaluate the genetic diversity of autochthonous LAB in goat milk and to preliminary characterize the bacteriocins produced by some strains, with respect to their inhibitory effects against foodborne pathogens, with special attention to Listeria monocytogenes. Lactic Acid Bacteria (LAB, n = 57) were previously obtained from raw goat milk, identified as Lactococcus spp. (n = 24) and Enterococcus spp. (n = 33), and characterized as bacteriocinogenic. Fingerprinting by PFGE demonstrated high genetic diversity, and 30 strains were selected and exhibited strong antimicrobial activity against 46 target strains (LAB, spoilage and foodborne pathogens). Six strains (L. lactis: GLc03 and GLc05; and E. durans: GEn09, GEn12, GEn14 and GEn17) were selected to characterize their bacteriocinogenic features, using Listeria monocytogenes ATCC 7644 as the target. The six strains produced bacteriocins at higher titer when incubated in MRS at 37°C up to 12h, when compared to growth at 25°C and 30°C. The produced bacteriocins

Referência:
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kept their antimicrobial activity after exposure to 100°C for 2h and 121°C for 20 min; the antimicrobial activity was also observed after treatment at pH 2.0 to 10.0, except for GLc03. L. monocytogenes populations was reduced approximately two logs after treatment with cell-free supernatants from the selected strains. Enterococcus and Lactococcus are naturally present in goat milk as part of their indigenous microbiota and showed great genetic diversity, representing a source of new isolates with antimicrobial potential. Based on our results, the bacteriocins produced by the strains GLc03, GLc05, GEn09, GEn12, GEn14 and GEn17 could be considered as suitable tools for use to control L. monocytogenes.

Palavras-Chave: goat milk, lactic acid bacteria, bacteriocins, PFGE, inhibition

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