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What are the realistic ways of application of LAB as a safe biopreservation tools in food fermentation processes?

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In last few decades' research for an appropriate starter culture combining different beneficial properties from technological, biopreservation, bacteriocin production to the probiotic's characteristics been explored by for different LAB cultures by several research groups. The challenge of combining different desirable characteristics in a same starter culture was faced. Different approaches were applied, and results were a development of innovative applications of LAB in biopreservation of fermented meat products. However, with the development of different branches of the life sciences and build of new knowledge in microbiology new challenges were faced. Traditional knowledge on safety of LAB was not any more sufficient to certificate safe application of used for centuries LAB starter cultures. Besides all beneficial properties studied for various LAB, a special attention needs to be pay on the safety of LAB: the possible presence of virulence factors, production of biogenic amines and

antibiotic resistance. This virulence determinants have been well detected and studied in Enterococci and Streptococci, however, in last few years report on presence of virulence factors in otherwise GRAS Lactobacilli have been showing the potential upcoming problems. Horizontal gene transfer of virulence factors between pathogenic and LAB, including probiotics is a highly possible scenario in case of uncontrolled application of probiotics.

In this overview we focus of application of beneficial LAB in production of fermented food products, however, we point attention of some challenges that this process can face. How this can be solved, what are the realistic way of application of LAB as a useful tool of biopreservation and what are the limitation? Where is the limit between reality and fiction? Are LAB safe for industrial application and what are limitations?

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