R. Jagadhi et al., J Food Process Technol 2012, 3:10
http://dx.doi.org/10.4172/2157-7110.S1.004

OMICS Group Conferences
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International Conference and Exhibition on
Food Processing & Technology

November 22-24, 2012 Hyderabad International Convention Centre, India

Bacteriocinogenic strains as bio preservative agents to improve the safety and shelf-life of foods

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Biopreservation, defined as the extension of shelf life and enhanced safety of foods by the use of natural or controlled microbiota and/or antimicrobial compounds, is an innocuous and ecological approach to the problem of food preservation and has gained increasing attention in recent years. Consequently, certain lactic acid bacteria (LAB), with demonstrated antimicrobial properties commonly associated with foods, are being assayed to increase the safety and/or prolong the shelf life of foods. The antagonistic properties of LAB derive from competition for nutrients and the production of one or more antimicrobial active metabolites such as organic acids (lactic and acetic), hydrogen peroxide, and antimicrobial peptides (bacteriocins). The use of LAB bacteriocins is considered an integral part of hurdle technology. Their combined use allows most pathogenic and spoilage bacteria to be controlled and also extend their inhibitory activity spectrum to such intrinsically resistant organisms as the Gram-negative bacteria. The use of bacteriocins and/or bacteriocin-producing strains of LAB are of great interest as they are generally recognized as safe organisms and their antimicrobial products as biopreservatives. However, it is desirable to continue to expand our understanding of the influences that environmental factors have on the implantation and survival of bacteriocinogenic strains and the activity of their bacteriocins in order to quantitatively estimate their efficacy for future applications in food model systems and establish adequate means of application of these biopreservatives.

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