Linkage between Plasmids of Lactic Acid Bacteria and their Antimicrobial Activity through Bacteriocin Production

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Objective

The study was carried out to screen different LAB strains for their plasmid profiling. The selected LAB strains were studied for plasmid mediated bacteriocin production. Efficacy of partially purified bacteriocin was investigated for its antimicrobial effect on paneer.

Methodology

Total 14 different LAB strains were screened to evaluate the presence of plasmid using alkaline lysis. Antimicrobial activity of screened LAB strains against pathogens was evaluated by well diffusion. Plasmid curing was carried out to determine linkage between plasmid and antimicrobial activity using novobiocin. Effects of partially purified bacteriocin on paneer was determined by checking its efficacy against spoilage causing microorganisms (i.e. yeasts, molds and coliforms).

Result and Discussion

Out of 14 LAB strains, only 4 bacterial strains showed presence of plasmid in Agarose gel. These strains found to impart zone of inhibition against *E.coli*. These inhibitory zones were observed to be disappeared when strains were subjected to plasmid curing. This indicates that in antimicrobial activity of this strains,plasmid could have some linkage. Application of crudebacteriocin on paneer found to reduce significantly total plate counts, coliforms as well as yeast &mold counts of samples stored at 25°C for 7days and also increasing the shelf life of paneer.

Conclusion

The plasmid profile of LAB is strictly strain dependent & could be related to antimicrobial activity. Partially purified bacteriocin could be used to prevent the growth of spoilage causing microorganisms thereby enhances the shelflife of paneer.