

An *in vitro* evaluation of probiotic properties of strains of *Lactobacillus paracasei*

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The development of probiotics during the past decade has signaled an important advance in food industry transferring it towards the development of functional foods. Our laboratory evaluated several species of *Lactobacillus* isolated from rice and dairy products for probiotic properties. Out of 156 Lactic Acid Bacterial species, two isolates LABMJ 19 and LABMJ 53 showed appreciable probiotic properties. These were identified as *L. paracasei* subsp. *paracasei* (LABMJ 19) and *L. paracasei* subsp. *tolerans* (LABMJ 53) based on genotypic characterization. Both the isolates showed acid-alkaline tolerance (pH 2.5 to 9.0), bile tolerance (0.2 to 2% w/v), resistance to antibiotics and lack hemolytic activity. They showed good acidification property (pH 4.6 to 4.8) up to 48 hr. Both the isolates displayed bacteriocin activities against gram positive and gram negative bacteria. The purified bacteriocin showed a 6.5 fold increase in activity. The homogeneity was confirmed by SDS-PAGE and HPLC. It showed stability at 121°C for 15 min and at pH of 3.0 to 8.0. The molecular weight of bacteriocin in LABMJ 19 and LABMJ 53 were 5.6kDa and 8.6 KDa, respectively. Optimization of physiological culture conditions resulted in a two-fold increase in the production of bacteriocin by both the isolates. Structure of paracasein was predicted for the first time by 3D JIGSAW and validated by bioinformatics tools, PROCHECK and Dali. The cultural conditions for the enhanced production of lactic acid and β -galactosidase was also optimized in these isolates.

We conclude that these isolates possess improved probiotic properties and are potential candidates for commercial use after evaluation *in vivo*.

Biography

J. Savitha received her Ph.D. degree in Botany, Madras University and postdoctoral research in University of Hull, England under the Jawaharlal Nehru (UK) fellowship. She worked on the regulation of polyunsaturated acid (PUFAs) production in fungi under Prof. Colin Ratledge. Currently she is working as an Associate Professor in Bangalore University, Department of Microbiology. She is the Chairman of Board of Examinations (BOE) and member of Board of syllabus and Academic Council of Bangalore University. She has published 21 research papers and has several research projects offered by Government funding agencies. Her interest of research is on Industrial Microbiology and Environmental Microbiology.

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