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Lactic acid bacteria is an evergreen beckoning of probiotic: A special emphasis on *Lactobacillus plantarum*

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The relation between lactic acid bacteria has been serving human kind from ancient times as a probiotic through fermented milk products. Elie Metchnikoff proposed that the Balkan population enjoyed excellent health due to consumption of large quantities of fermented milks containing beneficial bacteria. In the present study, probiotic potency of *Lactobacillus plantarum* strains isolated from human breast milk and Indian honey bee gut was characterized and evaluated. The study indicated that the characterized putative *L. plantarum* strains fulfill essential prerequisites of probiotic properties such as tolerance to acid, bile and simulated gastric juice which enable the strains to have easy passage of GIT & stability in small & large intestine. Antagonistic property against pathogens & cell surface properties varied among strains, and these abilities attribute to a protective mechanism/barrier of intestinal mucosa against pathogenic invasion. Non haemolytic and non-lecithinase properties ensured their safety & GRAS status. Further it was noted that *L. plantarum* strains have the ability to de-conjugate bile salt and assimilate cholesterol and few of them exhibited excellent β -galactosidase activity. The results testified their health promoting capability and scope for application in nutraceuticals sector. Biofilm formation and exopolysaccharides production are inter-related. All *L. plantarum* strains are potent exopolysaccharide producers enabling them to modulate immunity in host organisms by activating macrophages. ACE inhibition ability reduces the risk of hypertension and anti-oxidant activity contributes to the improvement in overall health again endorsing their health promoting effect. Considering the need to develop an industrial strain with prospective desirable features the basic technological properties were evaluated by checking viability in coagulated skim milk at different intervals, their storage stability and % level of lactic acid production. Exopolysaccharide production and acid production also enabled the strains to increase texture and aroma of the product. Technological properties also indicated scope for these strains to be considered as ideal starter cultures in dairy industry. Comparative evaluation suggests that irrespective of the source, *L. plantarum* strains are equally good for application as probiotics. However, the results of in vitro study need appropriate validation by in vivo study.

Biography

Keerthi Thalakkattil Raghavan is a Professor and Director of School of Biosciences, Mahatma Gandhi University, Kerala, India. Her research area includes Probiotics, Prebiotics and Bio-prospecting of marine microbes. She is an experienced academician and administrator. She is chairperson/member of important academic bodies of university as well as the coordinator of a number of national levels major research projects of the university. She has more than 25 research publications and four book chapters to her credit. She has participated and presented her research findings in more than four international conferences held abroad.

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