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Selective screening and molecular detection of probiotic lactic acid bacteria from dairy and human source

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Abstract

The collection of native lactic acid bacteria (LAB) (n=71) from different breast fed human faecal sample and dairy products enabled the detection of LAB with potential probiotic properties that can be used in food and biotechnology industries. Numerous *in vitro* studies which include tolerance to bile and low pH, tolerance to taurocholic acid, auto aggregation and co-aggregation with pathogens, and resistance to simulated gastric and intestinal fluids could reveal their probiotic characteristics. We studied the allelic variation of fibronectin (*fbp*), mucin binding protein (*mub*) and bile salt hydrolase (*bsh*) genes to rapidly detect the probiotic marker genes in the selected cultures (n=10). These potential cultures were rapidly characterized and differentiated the closely related probiotic LAB species by several molecular techniques like RAPD, RFLP, $(GTG)_5$, ITS, sequencing of the 16S rDNA gene. Production of bacteriocin, evaluation of antibiotic profiles and studying their pathogenicity properties (by non-haemolytic, non-gelatinase, lecithinase) served as indicators for the safety traits among the selected probiotic LAB. The use of several morphological, physiological and molecular based methods has revealed that the isolates belong to *Lactobacillus*, *Pediococcus*, *Streptococcus* and *Enterococcus* spp. Genetic screening and comparative genomic analysis by bioinformatics tools showed variation in the selected marker genes revealing their wider adaptability and different adhesion properties in most of the isolates. The present study provides information about the native LAB species predominant in human infants and dairy sources that could provide some beneficial effects when administered as a starter culture for the development of a novel probiotic product.

Biography

Sundru Manjulata Devi was awarded Ph.D in Biotechnology from Mysore University, India. Presently she is working as Research Associate at CFTRI, India. Her research work focussed on different pathogenic and beneficial microorganisms, where she contributed mainly on Diversity and evolution of *Helicobacter pylori*; Characterization of *Leptospira* spp. at molecular level by comparative genomics; Molecular genetic studies of anti-listerial pediocin PA-1 like bacteriocin among different lactic acid bacteria; and Rapid detection of probiotic lactic acid bacteria and assessing their suitability under *in vivo* systems. She has a total of 14 research paper published in reputed International and national journals.

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