Abstract

Probiotics are the live bacteria that imparts a health effect on host when they are taken in adequate amounts. They are considered as alternatives of antibiotics for treating human diseases and boosting immunity. In the current research, probiotics from goat milk, yogurt and different fruit samples were isolated, identified and their probiotic potential for human use was evaluated as well. Bacteria were isolated, followed by biochemical, physiological characterization, antibiotic sensitivity profiling and hemolytic properties estimation. Molecular characterization of isolates were done through amplification of 16S rRNA gene followed by Sanger sequencing. Top Blast homology sequences were determined. We isolated six probiotic strains and characterized them by 16S rRNA sequencing as *Limosilactobacillus antri* strain GCpro1, *Lactobacillus delbrueckii* strainGCpro2, *Ligilactobacillus salivirus* strain GCpro3, *L. delbrueckii* subsp. indicus strain GCpro4, *L. zeae* strain GCpro5, and *L. casei* strain GCpro6. The isolates *Ligilactbacilllus salivirus* strain GCpro3, *L. zeae* strain GCpro5, and *L. casei* strain GCpro6 showed rapid growth. All isolates showed tolerance to the increasing concentrations of NaCl and bile salts. Strains *Ligilactbacilllus salivirus* strain GCpro3, *Lactobacillus zeae* strain GCpro5, and *Lactobacillus casei* strain GCpro6 were even tolerant to acidic pH (pH: 2). All strains showed growth at temperature ranges from 30-45°C, while maximum growth was observed at 37°C. Antibiotic susceptibility testing showed that all strains were resistant to ampicillin and penicillin but showed sensitivity against ciprofloxacin and streptomycin. Antibacterial activity of isolates against *K. penumonia*, *S. aureus*, *E. faecalis*, *S. proteus* was tested. *Ligilactbacilllus salivirus* strain GCpro3, *L. zeae* strain GCpro5, and *L. casei* strain GCpro6 showed strong inhibitory effect on all pathogens. Conclusively, all discovered strains are safe to use but *Ligilactbacilllus salivirus* strain GCpro3, *L. zeae* strain GCpro5, and *L. casei* strain GCpro6 are best to use at commercial level for human health as they showed maximum probiotic potential.

KEYWORDS: Probiotics, human health, antibacterial activity, biochemical characterization probiotic potential, Sanger sequenci