

Exploration of Probiotics and Anti-Microbial Agents in Fermented Milk from Pakistani Camel spp. Breeds

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Abstract : Camel is a religious and culturally significant animal in Asian and African regions. In Pakistan Dromedary and Bactrian are common camel breeds. Other than the transportation use, it is a pivotal source of milk and meat. The quality of its milk and meat is predominantly dependent on the geographical location and variety of vegetation available for the diet. Camel milk (CM) is highly nutritious because of its reduced cholesterol and sugar contents along with enhanced minerals and vitamins level. The absence of beta-lactoglobulin (like human milk), makes CM a safer alternative for infants and children having Cow Milk Allergy (CMA). In addition to this, it has a unique probiotic profile both in raw and fermented form. Number of Lactic acid bacteria (LAB) including lactococcus, lactobacillus, enterococcus, streptococcus, weissella, pediococcus and many other bacteria have been detected. From these LAB Lactobacilli, Bifidobacterium and Enterococcus are widely used commercially for fermentation purpose. CM has high therapeutic value as its effectiveness is known against various ailments like fever, arthritis, asthma, gastritis, hepatitis, Jaundice, constipation, postpartum care of women, anti-venom, dropsy etc. It also has anti-diabetic, anti-microbial, antitumor potential along with its robust efficacy in the treatment of auto-immune disorders. Recently, the role of CM has been explored in brain-gut axis for the therapeutics of neurodevelopmental disorders. In this connection, a lot of grey area was available to explore the probiotics and therapeutics latent in the CM available in Pakistan. Thus, current study was designed to explore the predominant probiotic flora and antimicrobial potential of CM from different local breeds of Pakistan. The probiotics have been identified through biochemical, physiological and ribo-typing methods. In addition to this, bacteriocins (antimicrobial-agents) were screened through PCR-based approach. Results of this study revealed that CM from different breeds of camel depicted a number of similar probiotic candidates along with the range of limited variability. However, the nucleotide sequence analysis of selected anti-listerial bacteriocins exposed least variability. As a conclusion, the CM has sufficient probiotic availability and significant anti-microbial potential.

Keywords : bacteriocins, camel milk, probiotics potential, therapeutics

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