

Assessment of Lactic Acid Bacteria of Probiotic Potentials in Dairy Produce in Saudi Arabia

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Abstract : The aim of this study was to isolate and identify lactic acid bacteria and evaluate their therapeutic and food preservation importance. Ninety-three suspected lactic acid bacteria (LAB) were isolated from thirteen different raw and fermented milk of indigenous sources in the Kingdom of Saudi Arabia. The identification of forty-six selected LAB strains and genetic relatedness were performed based on 16S rDNA gene sequence comparison. The LAB counts in certain samples were higher under microaerobic than anaerobic conditions. The identified LAB belonged to genera *Enterococcus* (16 strains), *Lactobacillus* (9 strains), *Weissella* (10 strains), *Streptococcus* (8 strains) and *Lactococcus* (3 strains). Phylogenetic tree generated from the full-length (~1.6 kb) sequences confirmed previous findings. Utilization of shorter 16S rDNA sequences (~1.0 kb) also discriminated among strains of which V2 region was the most effective. None of the strains exhibited resistance to clinically relevant antibiotics or undesirable hemolytic activity, while they differed in other probiotic characteristics, e.g., tolerance to acidic pH, resistance to bile salt, and antibacterial activity. In conclusion, the isolates *Lactobacillus casei* MSJ1, *Lactobacillus casei* Dwan5, *Lactobacillus plantarum* EyLan2 and *Enterococcus faecium* Gail-BawZir8 are likely the best probiotic LAB and we speculate that studying the synergistic effects of bacterial combinations might result in the occurrence of more effective probiotic potential. We argue that the raw and fermented milk of animals hosted in Saudi Arabia, especially stirred yogurt (Laban) made from camel milk, are rich in LAB with promising probiotics potential.

Keywords : fermented foods, lactic acid bacteria, probiotics, Saudi Arabia

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