

Isolation and Characterization of Probiotic Lactic Acid Bacteria from Milk and Milk Products

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Probiotics refer to live microorganisms that exhibit a beneficial effect on the health of human being by maintaining the intestinal microbial balance. The most widely used bacteria considered as probiotics belong to the lactic acid bacterial (LAB) group. They can produce antimicrobial substances (e.g:- organic acids, hydrogen peroxide and bacteriocins) which can inhibit the growth of the possible pathogenic organisms. The present study aimed to isolate probiotic lactic acid bacteria from cow milk and cheddar cheese, yoghurt and to characterize the isolates using microscopic, biochemical and cultural tests. Bacterial strains naturally grown in milk, cheddar cheese and yoghurt were isolated using De Mann Rogosa Sharpe (MRS) agar medium and incubated at 37 °C for 48 hrs aerobically and anaerobically. There were eight strains grown under aerobic conditions and they were isolated, purified and characterization was done based on the morphological characters and biochemical studies such as Gram staining, catalase test and motility test. All the eight isolates were either rod or cocci shape, Gram positive, catalase negative, non motile and non spore formers. These eight isolated strains were identified as lactic acid bacteria. Agar well diffusion method was employed to determine the antimicrobial activity of isolates against the selected pathogenic organisms such as *E. coli*, *Klebsiella pneumoniae*, *Pseudomonase aeruginosa*, *Salmonella* sp and *Staphylococcus aureus*. Among the eight bacterial strains, three strains (M6, C1 and Y1 - Genus *Lactobacillus*) isolated from cow milk, cheddar cheese and yoghurt, which showed significantly higher ($p \leq 0.05$) antimicrobial activities in the antimicrobial activity screening by agar well diffusion assay, isolated from milk, cheddar cheese and yoghurt respectively were selected as potential source of probiotics.

Keywords: Antimicrobial activity, Cheddar Cheese, Cow milk, Lactic acid bacteria (LAB), Probiotics, Yoghurt