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Evaluation of probiotic potential of lactic acid bacteria isolated from cow milk and milk products

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Probiotics can be defined as live microbial food supplements with health benefits to human by improving the intestinal microbiota. Milk and milk products are the potential source of probiotic lactic acid bacteria. This study was aimed to evaluate the probiotic properties of lactic acid bacterial (LAB) strains C1, Y1 and M6 isolated from cheddar cheese, yoghurt and cow milk respectively. Probiotic properties such as tolerance to acid, NaCl, and bile, antimicrobial activity, lactose utilization, and antibiotic resistance were determined for the three isolates. Antimicrobial activities of the isolated LABs were evaluated against five human pathogenic bacteria,namely,*E.coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Salmonella sp.,* and *Staphylococcus aureus*. All the three isolates had significantly higher antibacterial activity against the indicator microorganisms than the control (nutrient broth). Though all the three isolates showed resistance to stomach pH (pH 3.0), the strain C1 had significantly higher tolerance to stomach pH than the others. Though the three isolates grew well in the presence of NaCl and 0.3% bile, the isolate M6 showed significantly higher growth with NaCl and 0.3% bile than the others. Though all the three isolates had the capacity of utilizing lactose, strain M6 showed a more prominent colour change in the lactose utilization test than the other two strains. When antibiotic susceptibility of the isolated LABs were evaluated using four antibiotics,namely, Ampicillin, Streptomycin, Bacitracin, and Gentamycin, strain M6 was found to be resistant to Ampicillin and Bacitracin but sensitive to Streptomycin and Gentamycin. The other two strains (C1 and Y1) were sensitive to all the four antibiotics used in the experiment. Based on the antibiotic sensitivity tests and analysis of probiotic properties, strain M6 was selected as a probiotic lactic acid bacteria for further studies. The results of these tests indicate that the lactic acid bacteria isolated from milk products have potential use as probiotics in various food products.

Key words: Cheddar cheese, lactic acid bacteria, milk, Probiotic properties, yoghurt

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