RESEARCH PAPER

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Evidence for probiotic properties of *Lactobacillus fermentum* and *Lactobacillus reuteri* isolated from human breast milk

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The present study was conducted to determine the probiotic properties of *Lactobacillus fermentum* and *Lactobacillus reuteri* isolated from human breast milk. The samples were inoculated with MRS medium and incubated for 48 hrs at 37^{0}C under anaerobic incubation. The identification of the culture was based on characteristic of Lactobacilli as presented in the Bersey's Mannual of Determinative Bacteriology, carrying out morphology, gram stain, catalase, oxidase and other biochemical tests, growth at 15^0, 37^{0}C and 45^{0}C and fermentation of different carbon sources. Selection of the strain included various criteria such as agreement with biosafety aspects, antibiotic susceptibility test, tolerance to low pH, bile and NaCl concentration, temperature, Hemolytic activity and antimicrobial activity. This result suggests that these two strains are favorable for use as probiotics. It should be suitable strains for probiotic use of human being and animals. *L. fermentum* had high probiotic activity when compared to *L.reuteri*.

Key words : MRS medium, Probiotic, Antimicrobial therapy, *Lactobacillus*

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INTRODUCTION

Growing human population urges the immense need to exploit the existing live stocks resources to meet an animal protein requirement (Saavedra, 2001). In contrast to "antibiotic" the term "probiotic" was coined to describe a substance produced by one microorganism that stimulates the growth of another microorganism. The term "probiotic" was derived from the Greek word meaning "for life". (Reid *et al.,* 2003). An expert panel commissioned by FAO (Food and Agriculture Organization) and WHO (World Health Organization) defined probiotic as "live microorganism", which when administrated in adequate amounts confers a health benefit on the host. (FAO and WHO 2001).Various bacterial genera most commonly used in probiotic preparations are *Lactobacillus, Bifidobacterium, Enterococcus, Bacillus* and *Streptococcus*. Some fungal strains belonging to saccharomyces have also been used. (Jin *et al.,* 2000; Gibson and Roberfroid, 1995).

The probiotic meaning for life is derived from the greek language. It was first used by Lilly and Stillwell in 1965 to describe "Substances secreted by one microorganism which stimulates the growth of another" and thus was constructed with the term antibiotic. Probiotic for human use will require substantiation of efficacy with human trails. Appropriate target specific *in vitro* tests that correlate with *in vivo* test results are recommended. Currently used *in vitro* tests for study of probiotic strains are resistance to gastric acidity, bile salt resistance, adherence to mucous and/ or human epithelial cells and cell lines, antimicrobial activity against potentially pathogenic bacteria, ability to reduce pathogens adhesion to surface, bile salt hydrolase's activity, resistance to spermicides (applicable to probiotics for vaginal use. (Dash, 2009).

Probiotics can be bacteria, moulds, yeast but most probiotics are bacteria. Among bacteria, lactic acid bacteria are more popular. *L.acidophillus, L.casei, L.lactis, L.helviticus, L.salivarius, L.plantarum, L.bulgaricus, L.rhamnose, L.johnsonii, L.reuteri, L.fermentum, L.delbruckii, Streptococcus thermophillus, Enterococcus faecaum, E.faecalis, Bifidobacterium bifidum, B.breve, B.longum* and *Saccharomyces boulardii* are commonly used bacterial probiotics. A number of clinical studies have been