

# SURVIVAL OF COMMERCIAL PROBIOTIC STRAINS TO LOW pH AND BILE

TONG EE VON

B. Sc. (Hons.) Food Science and Nutrition  
Faculty of Applied Sciences  
UCSI University

2009

Library Services  
UCSI Education Sdn. Bhd. (183479-U)  
No. 1, Jalan Menara Gading, UCSI Heights,  
56000 Kuala Lumpur, Malaysia.  
Tel: 603-9101 8880 Fax: 603-9102 3606  
Website : [www.ucsi.edu.my](http://www.ucsi.edu.my)

## ABSTRACT

Probiotic has been widely used in human probiotic preparation that available commercially in the market. Fermented dairy products are the most commonly used vectors for probiotic. This is because the role of probiotic in human health has been increasingly recognized together with the growing awareness of certain health benefits of fermented dairy products. Thus this study is aimed to evaluate the cultured milk in the market and investigate the acid and bile tolerance of the strains upon ingestion by the host. One of the commercial probiotic cultured milk product, brand N, that was obtained from the local market was assayed in this study. The experimental procedures were performed with the use of PBS at different pH level which simulate closely to the stomach of a human. Later, the experimental proceed to bile tolerance assay at different concentrations which simulate closely to the small intestine of a human. The acid tolerance tests were studied under 3 different pH levels which are pH 1.5, pH 3.0 and pH 7.2. The viable counts of the strains were studied at 0, 1.5 and 3 hours by determining the colony forming unit count that grow on the MRS agar. The bile tolerance tests were studied under 4 different bile concentrations which are 0%, 0.3%, 1% and 2% of bile. The viable counts of the strains were studied at 0 and 24 hours. The total viable counts of sample N resulted to have  $5.38 \pm 0.28 \log_{10}$  CFU / ml. Sample N recorded low count after the acid exposure. The only obtainable viable cell count on pH 1.5 is at 0 hour which has  $2.32 \pm 2.03 \log_{10}$  CFU / ml. There is a drop of 1.66 of cells at pH 3.0 after 3 hour. Based on the experiment, the cell would not be viable after exposure to acid treatment and thus it affects the survivability of the cell upon acting by bile. During the bile treatment on the cell after exposure to pH 3.0, the obtainable viable cell count at 0% bile records a total count of 3.31 log unit of cells; 0.3% bile records a total count of 2.81 log unit of cells; 1% bile records a total count of 2.59 log unit of cells, and 2% bile records a total count of 2.21 log unit of cells. This product also does not show a fair survivability and tolerance upon action by bile. In conclusion, the commercial product studied does not meet the requirement of a probiotic function.

Library Services  
UCSI Education Sdn. Bhd. (185479-U)  
No. 1, Jalan Menara Gading, UCSI Heights  
56000 Kuala Lumpur, Malaysia.  
Tel: 603-9101 8880 Fax: 603-9102 3606  
Website : [www.ucsi.edu.my](http://www.ucsi.edu.my)