

UNIVERSITY TEKNOLOGI MARA

**SAFETY ASSESSMENT OF LACTIC ACID BACTERIA
FOR HUMAN USE**

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ABSTRACT

Nowadays, Lactic Acid Bacteria (LAB) such as probiotic have been widely used in commercial food products and consumed by people in many countries. Many reports have been published regarding the benefits and advantages of probiotic in recent years. However, there are also issues on the safety of probiotic that has raised concern among the public. This research project was primarily carried out evaluate the toxicity of Lactic Acid Bacteria (LAB) in human. A Lactic Acid Bacteria strain (LAB 8) was recultivated and grown in sterile deMan-Rogosa-Sharpe (MRS) broth. After freeze drying process, the LAB sample was administered orally to groups of mice with different doses for each groups (5×10^8 , 2×10^9 , and 1×10^{10} cfu/mice per day). The mice were observed for behavioural changes, sign of toxicity and mortality throughout the 14-days of post-dosing period. At day 14, the mice were killed and organs were then removed for gross examinations. No noticeable behavioural, activity changes or treatment-related illness occurred throughout the experiment period in all mice. No obvious changes was observed macroscopically on the visceral organs of the mice. No incidence of bacteremia occurred as there was no significant incidence of bacterial translocation into liver, spleen and blood. This present study indicates that LAB 8 is safe to be used as a probiotic. However, toxicity study on more animals need to be conducted to confirm the findings of this study.

CHAPTER 1

INTRODUCTION

1.1 Research Background

Probiotics are defined as live microorganisms which when administered in adequate amount confer a health benefit on the host (FAO, 2001). Microbial components and metabolites are essentially excluded from the definition of probiotics. The human digestive tract is inhabited by numerous microbes. The balance of this microbial flora greatly influences the intestinal environment. After several hundred years of safe use in fermented foods, Lactic Acid Bacteria (LAB) have attracted an increasing number of attention from both medical & nutritional scientists (Lee and Salminen, 1995 ; O'Sullivan et al., 1992). The health-promoting effects of some LAB strains are well documented (Naidu et al., 1999). These include anti infection properties (Isolauri et al., 1991), immunomodulatory activity (Olivares et al., 2006), alleviation of lactose intolerance (Salminen at al., 1998a), anti-tumour (Kato et al., 1994), hypocholesterolaemic effects (Fukushima and Nakano, 1996) and anti-oxidant. Besides that, LAB strains have proven efficacy in the prevention of allergic diseases (Furrie, 2005) and beneficial effects in intestinal inflammation (Peran et al., 2005).