5.1 INTRODUCTION

Lactic acid bacteria (LAB) with scientifically supported health claims have an increasingly high market potential. There has been a great interest in the isolation and development of new probiotic strains during recent years. Research efforts have focused on improved methodologies needed for screening new strains in order to facilitate rapid identification of specific properties suitable for a particular purpose (Mattila-Sandholm et al., 1999). The safety of lactic acid bacteria used in clinical and functional food is of great importance. In general, lactic acid bacteria have a good record of safety, and no major problems have occurred. Cases of infection have been reported with several strains, most commonly with the ones that are naturally most abundant in the human intestinal mucosa (Gasser, 1994; Aguirre and Collins, 1993). Studies on safety have been documented on dairy strains (Saxelin et al., 1996) and a review of current knowledge on safety of probiotic bacteria has been reported by Donohue and Salminen (1996). It is most important for probiotic lactic acid bacteria that their safety has been assured and that they confirm to all regulations. A proposed scheme for safety assessment has been presented earlier (Donohue and Salminen, 1996). Most stringent studies have to be completed for genetically modified strains intended to human consumption.

The ability of Antimicrobial peptides (AMPs) to interact with different cell membranes makes it to serve as the multifunctional effector molecules. Increased susceptibility of tumor cells to cationic membrane active AMPs due to the presence of high content of anionic phosphatidylserine molecules on their membranes than the normal cells makes it an interesting candidate to use AMPs as antitumor agents (Utsugi et al., 1991).
Several studies have demonstrated a cytotoxic activity of AMPs against cancerous cells. Some cationic antibacterial peptides exhibit a broad spectrum of cytotoxic activity against cancer cells, which could provide a new class of anticancer drugs. Three mechanisms have been proposed and they are namely: (Altincicek et al., 2007) lysis of the cell membrane, (Ahn et al., 2008) activation of extrinsic apoptotic pathways, and (Ahn et al., 2006) inhibition of angiogenesis. However, further experiments are needed to determine the safety of AMPs in cancer treatment (Cerovsky et al., 2009; Dobrzynska et al., 2005) isolated three novel structurally related pentadecapeptides, named lasioglossins, which were isolated from the venom of the eusocial bee Lasioglossum laticeps. These lasioglossins exhibited potent antimicrobial activity against both Gram-positive and Gram-negative bacteria, low haemolytic and mast cell degranulation activity, and a potency to kill various cancer cells in vitro.

The present study was aimed to investigate anticancer properties of bacteriocin from L. garvieae. The number of cell lines had been used such as MDA-MB - Human adenocarcinoma, mammary gland, LNCap-FGC - Human carcinoma Prostate, K-562- Human chronic myelogenous leukemia, Bone marrow, Hela - Human cervix, A549 - Human lung carcinoma. The apoptosis activity was also aimed to evaluate on PC3 human prostrate cancer cell line.