Preface

The research work of the PhD thesis “The Probiotic and Health promoting capabilities of Enterococcus faecium isolated from infant feces” was conducted under the guidance of Dr. Keerthi T.R., Associate Professor in Biotechnology, in the laboratory of Microbial Biotechnology, School of Biosciences, Mahatma Gandhi University. Lactic Acid Bacteria (LAB) constitute an integral part of the healthy gastrointestinal microecology. They play an important role in the maintenance of gut homeostasis and influence the host metabolism in a beneficial manner. Probiotics are defined as live microorganisms which when administered in adequate amount can confer a health benefit on the host”. The increased awareness about the role of maintaining a balanced gastrointestinal tract microflora on the health status of animals has led to significant advances in probiotic research. Here the present study was focused on characterization of a LAB strain of human origin for its probiotic and health promoting capabilities. The work has been compartmentalized into 4 chapters.

The first chapter “Isolation, screening and selection of potential LAB strain from infant feces”, gives an overview of the importance of the gastrointestinal microflora and evolution of the concept of probiotics. The chapter describes isolation of a potential probiotic strain based on the preliminary characteristics, such as tolerance to acid, bile, artificial gastric juice as well as antibacterial action towards the enteric fever pathogens, Salmonella typhi and Salmonella paratyphi A. Chapter II entitled as “Evaluation of in vitro and in vivo Probiotic characteristics of Enterococcus faecium MBTU-P1F1” comprises a detailed investigation of the all the desirable probiotic characteristics of the test strain including its colonization
ability in the gastrointestinal tract of Balb/c mice. The chapter also compares the growth curve pattern of the strain with that of the enteric fever pathogens and assesses the safety of *Enterococcus faecium* MBTU-P1F1 as a probiotic for use in human and animal model.

Further Chapter III deals with identifying the nature of the antibacterial principle of the identified strain and is named “Partial characterization of bacteriocin like substance against enteric fever pathogens produced by *Enterococcus faecium* MBTU-PIF1”.

The final chapter “In vitro and in vivo evaluation of health promoting attributes of *Enterococcus faecium* MBTU-PIF1” explores the beneficial effects of the strain by in vitro and in vivo experiment. The chapter is divided into two parts 4A and 4B. 4A describes in vivo studies while 4B deals with the in vivo studies.

Summary of the work and findings derived from the results are described in the final section of the thesis.