Preface

The work presented in this thesis was carried out at the School of Biosciences, Mahatma Gandhi University, Kerala, India, under the supervision of Dr. Keerthi T. R., Associate professor in Biotechnology, Mahatma Gandhi University. The development of probiotics applicable to medical use is a multidisciplinary process requiring both empirical and fundamental research. The research of probiotics or beneficial bacteria for animals is now increasing with the demand. The use of probiotics, which control pathogens through a variety of mechanisms, is increasingly viewed as an alternative to antibiotic treatments. In the present study, we have performed the isolation, in vitro probiotic characterization, selection, and identification of potential probiotic sporeformer from various natural sources. In vivo immunomodulation capability of this probiotic strain was studied with focus on the humoral and cell mediated immune responses of the animal model. Preventive and curative effects of this strain against cyclophosphamide induced immunosuppression was also studied to determine the probiotic potential.

This work has been described in four chapters. Chapter I is focused on isolation and screening of sporeformers from different natural sources. In chapter II, adhesion and cell surface properties of the selected five wild species of sporeformers were compared with that of the enteric pathogens Salmonella typhi, Salmonella paratyphi A and Vibrio cholerae. Third chapter describes the characterization and identification of the selected potential probiotic - MBTU PBBM1. Fourth chapter comprises of two sections 4. I and 4. II. The first part 4.1 deals with the in vivo response of MBTU PBBM1 spores in Balb/c mice. Second part of the fourth chapter (4.II) deals with probiotic effect of MBTU PBBM1 in immunocompromised mice. The summary and conclusion focus on the essential and desirable probiotic features of the sporeformer MBTU PBBM1, and its immunomodulatory capabilities in Balb/c mice.