Preface

The research work of the thesis entitled "**Dimethyl fumarate and its Cocrystals: Potential biological applications**" assessed the novel mechanism of action of dimethyl fumarate (DMF), including the effect of DMF on MOG_{35-55} induced EAE model and enzyme kinetics of DMF/MMF on cathepsin C. Also, we have prepared cocrystals of DMF which overcome its sublimation problem and provide safety against its gastric-related adverse effects. The whole work has been compiled into six chapters: **Chapter 1** describes the introduction and significance of the present study. **Chapter 2** contains the immunological mechanism of DMF as a covalent inhibitor of cathepsin C; the novel mechanism of action has been explored in both *in-vitro* and *in-vivo*. **Chapter 3** discusses the preparation and characterisation of cocrystals to overcome their gastric-related adverse effects. **Chapter 4** includes the preparation, characterization, *in-vitro* and *in-vivo* pharmacokinetic evaluation of thermostable dimethyl fumarate cocrystals. **Chapter 5** summarizes all the experiments with their essential outcomes.