

## **ABSTRACT**

*Ralstonia solanacearum* is a Gram-negative, plant pathogenic bacterium which causes a devastating wilt disease in many different plant species including economically important crop plants such as tomato, potato, banana, eggplant, cashew, papaya, peanut, pepper etc. It infects 54 distinct botanical families throughout the world. The pathogen exhibits vast genetic diversity in strain level reported from different geographical regions hence is also termed as *Ralstonia solanacearum* species complex (RSSC). The bacterium also possesses several unique features such as long term surviving ability in soil and water, latent infections in distant hosts, the lethal nature of the disease, large host range, wide geographical distribution and presence of all six types of protein secretion systems etc. which have triggered several scientists to address many research questions on this bacterium. Although, several questions have been enlightened, understanding this complex pathogen is still incomplete. In this thesis, we tried to address few exciting aspects of *R. solanacearum* F1C1 regarding its pathogenicity towards different hosts, behaviour/adaptation in hosts and role of some of the metabolic functions in virulence. Our research findings are described mainly in four chapters. The conclusion and future aspects of this study are separately discussed at the end as chapter five.

Chapter 1, “Introduction and review of literature” describes a concise background of the study and research questions addressed. It also includes recent advancements corresponding to the research questions addressed.

Chapter 2 describes comparative pathogenicity study of *R. solanacearum* in tomato and eggplant seedlings. It focuses on exciting pathogenicity behaviour of the pathogen in two different hosts.

Chapter 3 highlights the enigmatic behaviour of *R. solanacearum* in its pathogenicity or host adaptation in tomato seedlings.

Chapter 4 elaborates on the role of polyphosphate metabolism homologs of *R. solanacearum* F1C1 in virulence.

Chapter 5 includes conclusions and future aspects of the work based on the findings of the study.