PREFACE

The research work embodied in this thesis entitled “Investigations on Catharanthus roseus and Agrobacterium rhizogenes interactions for the production of terpenoid indole alkaloids” has been carried out under the supervision of late Dr. Jayanti Sen and Dr. Alok Krishna Sinha, at National Institute of Plant Genome Research, New Delhi, India.

This thesis has been divided into two parts. In Part A, investigations have been carried out to study the horizontal transfer of T-DNA genes from Agrobacterium rhizogenes to Catharanthus roseus genome. To validate this horizontal gene transfer event, genes homologous to T-DNA ORFs in C. roseus were amplified with PCR, verified by Southern blot analysis. The site of T-DNA integration in C. roseus genome was shown by cloning of the border junction sequences by genome walking. Expression of the transferred genes was studied in different conditions.

In Part B, an attempt has been made to decipher the role of C. roseus peroxidase gene, CrPrx in MIA pathway. For this, CrPrx overexpressed and silenced hairy root lines were generated in C. roseus. These transgenic lines were used to study the effect of CrPrx on accumulation of transcripts of MIA biosynthetic pathway genes and specific alkaloids. The data indicated the possible role of CrPrx particularly in the regulation of MIA biosynthetic pathway.

This work is original and has not been submitted so far in part or in full, for the award of any degree or diploma by any university.

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