Preface

The recombinant DNA technology has changed the whole perspective of modern plant biological research, in particular to develop genetically modified (GM) crops for disease resistance, better nutritional quality etc. Now it is possible to clone the enzyme genes and to tailor the structure and activity of respective genes according to our desire. To develop GM crops for better nutritional quality through metabolic engineering a thorough knowledge of plant genetics particularly its complex biochemical, physiological and developmental controls of metabolic pathways are essential. Amino acid metabolic pathways are known to be controlled by feed back mechanisms by its end products. Aspartate kinase is the first enzyme of aspartate family amino acid metabolic pathway and controlled by feed back inhibition threonine and lysine. In this thesis I studied aspartate kinase in *Cicer*, an important crop legume in India. Attempt has been made to purify aspartate kinase and to clone the gene. The regulation of this enzyme was further studied under different environmental conditions to understand its behaviour.

The thesis is divided into five different chapters. In the first chapter a general introduction of aspartate family pathway has been described. The second chapter contains a general illustration of review of literature. Materials and methods have been described in the third chapter. The results and discussion has been described in different sub-headings. Each sub-heading follows an brief introduction, results and discussion. The summary of the whole thesis is in the chapter V.