Chapter 1

Introduction
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The multibranched, multifunctional shikimate pathway "a metabolic tree with many branches" (Bentley, 1990) is the major pathway for the biosynthesis of aromatic compounds in bacteria, fungi and plants. The proteingenic aromatic amino acids-phenylalanine, tyrosine and tryptophan are the prominent metabolites generated by this pathway and represent only a fraction of the branch products. These serve as the precursors for virtually thousands of natural products like, vitamins, quinones, flavonoids, phenolics, alkaloids, coumarins, glucosinolates, indole 3-acetic acid and antibiotics and pigments of bacteria etc. (Jensen, 1985a).

The aromatic amino acid pathway is absent in animals. Therefore, the animals are dependent upon plant systems for their requirement of these essential amino acids, phenylalanine (phe), tyrosine (tyr) and tryptophan (trp). For the increased production of these amino acids, the basic knowledge of the regulation of the enzymes involved in the shikimate pathway is essential.

Besides the future prospects of the application of this study, there are a number of basic aspects. A major finding on the involvement of two of the enzymes of the shikimate pathway viz. 3-Deoxy-D-arabino heptulosonate - 7-phosphate (DAHP) synthase and chorismate mutase (CM), during the development of in vitro grown cultures of Brassica juncea (Sharma et al., 1993) inspired us to take up a detailed study on the purification, characterization and regulation of these enzymes.