SUMMARY

The thesis consists of six chapters.

Chapter I gives general introduction to the enzymes including structures, steady state kinetics, enzyme inhibition, role of molecular biology and single molecule enzymology.

Chapter II is a brief review of the studies done on peroxidases and their applications which include horseradish peroxidase, cytochrome C peroxidase, lignin peroxidase, Mn-peroxidase, versatile peroxidase, chloroperoxidase, ascorbate peroxidase, myeloperoxidase, and lactoperoxidase.

Chapter III describes the studies done on chloroperoxidase of Musa paradisiaca stem juice, which is a new source of chloroperoxidase. The purification and characterization of the chloroperoxidase from a conveniently available source have been achieved and its application in the conversions of arylamines to nitrosobenzenes have been demonstrated.

Chapter IV gives the results and discussion of the studies done on purification and characterization of the Mn-peroxidase from the juice of Musa paradisiaca stem. This is the first report of a Mn-peroxidase from a plant source. The properties of Mn-peroxidase are similar to the properties of Mn-peroxidase reported from fungal sources.
Chapter V discusses the results of studies done on three lignin peroxidases, lignin peroxidase of *Loweporus lividus* MTCC-1178, lignin peroxidase of *Lenzitus seperia* MTCC-1170 and lignin peroxidase of *Musa paradisiaca* stem juice. All the three sources of the lignin peroxidase are new. Moreover the role of lignin peroxidase in the depolymerization of humic acid has been demonstrated.

Chapter VI describes the results of the studies made on the ascorbate peroxidase of *Musa paradisiaca* stem juice. The role of this enzyme in the conversion of methyl phenyl sulphide to methyl phenyl sulfoxide has been demonstrated.

Part of research work done has been accepted for publications in Eng. Life Sci. 9, 1-6 (2009) and Biochemistry (Moscow) 74,------ (2009).