PREFACE

The thesis describes the synthesis, spectral analysis and antimicrobial studies of a novel heterocyclic compounds with oxygen, nitrogen and phosphorus as heteroatoms in five, six and eight-membered rings.

A brief review of literature is presented and an overview of applications of organophosphorus compounds is discussed in Chapter I.

Objectives and experimental details are reported in Chapter II and Chapter III, respectively. Chapter IV contains the synthesis and biological activity of 2-substituted-2,3-dihydro-5-benzoyl-1H-1,3,2-benzodiazaphosphole 2-oxides/sulfides.

In Chapter V, Section A deals with the synthesis and antimicrobial activity of 2-alkylcarbamato/alkenylcarbamato/thiocarbamato-2,3-dihydro-5-benzoyl-1H-1,3,2-benzodiazaphosphole 2-oxides and Section B describes synthesis and antimicrobial activity of N-(substituted)-N'2,3-dihydro-2-oxido-5-benzoyl-1H-1,3,2-benzodiazaphosphole 2-yl) ureas.

Synthesis and antimicrobial activity of N-(substituted)-N'-(5-bromo-5-nitro-2-oxido-1,3,2-dioxaphosphorinane 2-yl)ureas and N-(substituted)-N'-(6-methyl-2-oxido-4H-1,3,2-dioxaphosphorino(5,4-b)pyridine 2-yl)ureas are reported in Section A and Section B, respectively in Chapter VI.

Chapter VII contains the synthesis and biological activity of novel phosphorus heterocyclic compounds with exocyclic P-C link.

Synthesis of 2-(amino acid ester)-6-(1,1-dimethylethyl)-3-cyclohexyl-3,4-dihydro-2H-1,3,2-benoxazaphosphorin 2-sulfides/oxides and 2-[amino acid ester/bis-(2-chloroethyl)amino]-6-methyl-4H-1,3,2-dioxaphosphorino(5,4-b)pyridine 2-sulfides are discussed in Section A and Section B, respectively in Chapter VIII.

IR, $^1$H, $^{13}$C and $^{31}$P NMR and mass spectra of these compounds are recorded and their spectral characteristics are discussed in the respective chapters.

Bactericidal and fungicidal activities are evaluated for some of these compounds and the results are presented in the corresponding chapters.