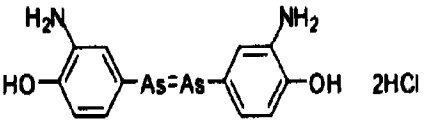
ABSTRACT

Investigation embodied in this thesis entitled "Studies toward the synthesis of compounds exhibiting antibacterial activity" divided into four chapters, which are as follows.

Chapter 1

Introduction

First chapter is an introductory summary of antibacterial agents and its history. Although antibacterial agents were used from ages, the general principles of antibiotic action were not understood until the nineteenth century. The Dutch scientist Anton van Leeuwenhoek first observed bacteria in 1674, however, it was not until the nineteenth century that their link with disease was appreciated. In 1910, Paul Ehrlich has successfully developed the first example of a purely synthetic antibiotic, the arsenic-containing compound salvarsan 1 and proved effective against trypanosomiasis.



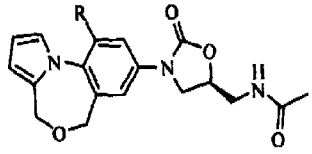
Salvarsan 1

Since then, different class of compounds having different mode of action and exhibiting antibacterial activity have evolved. Though there is availability of wide range of antibacterial agents in medicine, the emergence of bacterial resistance to the antibiotics poses a serious concern for medical professionals during the past decade. To address these problems, medicinal chemists are still actively seeking new and improved antibacterial agents.

Chapter 2

Synthesis and antibacterial activity of pyrrolo benzoxazepinyl oxazolidinones

In this chapter we described the synthesis of pyrrolo benzoxazepinyl oxazolidinone and fluoro pyrrolo benzoxazepinyl oxazolidinone. We also carried out structure activity relationship studies on pyrrolo benzoxazepinyl oxazolidinone, by replacement of acetamide part of the compound with different amides, carbamates, thioamides and thiocarbamates and its biological activity was examined.

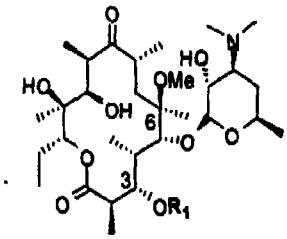


R = H
R = F

Chapter 3

Synthesis and antibacterial activity of 3-*O*-substituted clarithromycin derivatives

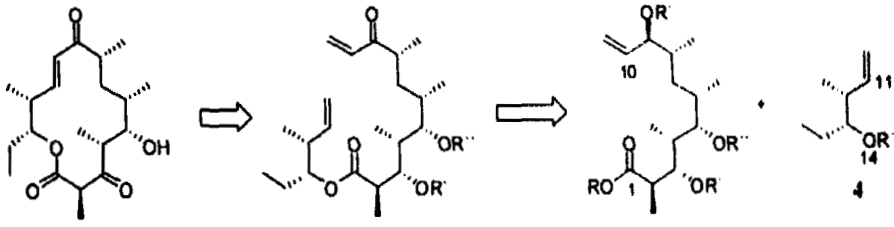
In this chapter we described the synthesis of various 3-*O*-substitued clarithromycin derivatives. There were relatively few attempts at 3-*O*- position of clarithromycin with esters having different functionalities. So, after removal of cladinose moiety of clarithromycin, alcohol was esterified with aromatic acids having different functionalities, aralkyl and aralkene acids and its biological activity was examined.



Chapter 4

Studies toward the synthesis of narbonolide: stereoselective synthesis of C1-C10 and C11-O14 fragments

In this chapter we described an efficient and stereoselective synthesis of C1-C10 and C11-O14 fragments of narbonolide **1** by employing iterative thiazolidinonethione propionate aldol reaction to get Evan and non-Evan syn aldol products, and Myers alkylation to establish chirality at C6.



Narbonolide **1** **2** **3** **4**