

S Y N O P S I S

The dissertation entitled, "SYNTHESIS AND STUDIES ON 1,4-BENZOXAZINE DERIVATIVES" presented to the Faculty of Science, Shivaji University, Kolhapur, in partial fulfilment of the degree of Master of Philosophy in Chemistry.

The Dissertation consists of three chapters and embodies accounts of Chapter one, an introduction to the subject, a brief survey of literature and scope of present work; Chapter two, an experimental part and spectral interpretation; Chapter three, evaluation of antibacterial activity, of synthesized compounds, results and conclusions.

CHAPTER ONE :

An introduction chapter describes oxazines as an interesting class of heterocyclic compounds having wide ranging applications. Many important dyes, medicinals, insecticides and biologically active substances, constitute the members of this series of heterocyclic compounds especially of 1,4-oxazines. The biological activities such as antibiotic, anti-inflammatory, antibacterial, antifungal etc. of 1,4-benzoxazine derivatives have been reported. In addition to these properties they are also polymerisable monomers, plasticisers for cellulose acetate tanning agents and corrosion inhibitors indicated with due references.

The biological, industrial and commercial importance of these derivatives has stimulated to undertake the present dissertation work.

The first chapter also comprises of a brief survey of related literature on different approaches for the synthesis of 1,4-benzoxazine derivatives possessing different biological activities.

It includes the scope of present work indicating that though antimicrobial and anti-inflammatory properties of benzoxazines have been reported. The information available about the similar properties of various 1,4-benzoxazine derivatives is limited. However some work has been done with a view to determine the relation between constitution and biological activity.

The main interest in the synthesis of hydrazido derivatives of 1,4-benzoxazin-3(2H)-one lies in the fact that most of them may be water soluble and can easily be absorbed in the blood stream, and expected to show high biological activity. The title compounds in the present study are synthesised by new route and tested for antibacterial activity against different types of bacteria.

CHAPTER TWO

Chapter two consists of two parts, Part A and Part B.

Part A consists of three sub parts as Part I, Part II and Part III.

Part I describes the details of experimental work on the synthesis of unsubstituted and substituted 4(hydrazido)-1,4-benzoxazin-3(2H)-ones while Part II describes the synthesis of N-dialkyl derivatives of compounds described in Part I and Part III describes the synthesis of triazolo derivatives of compounds described in Part I.

Synthesis of unsubstituted and substituted 4(hydrazido)-1,4-benzoxazin-3(2H)-ones are presented by a new route, using ortho halo substituted ^{phenoxy}acetic acid derivatives as starting materials. The 'acid' was first converted into corresponding 'amide' by a known method in 80 % yield. This amide is further converted into substituted and unsubstituted 1,4-benzoxazin-3(2H)-ones in 80 % yield, by base catalysed cyclisation in methanol. These compounds were converted into 4 (carboethoxy)-1,4-benzoxazin-3(2H)-ones to about 60 % yields, which were further converted into corresponding 4(hydrazido)-1,4-benzoxazin-3(2H)-one to about 76 % yield.

Part II, describes the synthesis of N-dimethyl derivatives of the compounds synthesised in Part I.

Part III describes the synthesis of triazolo derivatives of the compounds synthesised in Part I.

All the compounds, encountered in Part I, Part II, Part III are characterised after purification by M.P./B.P., elemental analysis, UV, IR and PMR spectra.

Part B Spectral Interpretation

Part B, incorporates the spectral interpretation of spectra in support to the structures of the compounds synthesised and also the schemes used for the preparation of the compounds have been given.

CHAPTER THREE :

Chapter three deals with the evaluation of antibacterial activity of the compounds and it throws some light on the relation between structure and the antibacterial activity of the compounds.