

PREFACE

Chapter-I contains many observations from the literature regarding the various types of heterocyclic compounds. Major emphasis has been laid down upon the synthesis and pharmaceutical significance of the five and six membered heterocyclic products.

Chapter-II has been divided into three parts **IIa**, **IIb** and **IIc** which describes the synthesis of bithiadiazolines and bithiazolidinones. Here the bithiosemicarbazones built around the alkyl chains of varying lengths undergo cyclization reactions with acetic anhydride and ethyl bromoacetate.

Chapter-III which is also subdivided into three parts **IIIa**, **IIIb** and **IIIc** contains the chemical transformation of various bischalcones to yield bispyrazolines built around the varying length aliphatic chains. In chapter **IIIa**, 1,3,5-triphenyl-bispyrazolines linked via 3-aryl ring has been synthesized while the chapter **IIIb** describes the synthesis of 1,3-diphenyl-5-thienyl bispyrazolines. The chapter **IIIc** deals with the synthesis of 1,3,5-triphenyl bispyrazolines linked via 5-aryl ring.

The last chapter **IV** describes the synthesis of new bischromones linked via 2-aryl ring with the varying lengths alkyl chains. These bisheterocyclics has been prepared from the cyclization reactions of bischalcones with iodine in the presence of DMSO.

The structures of the prepared compounds (intermediates & symmetrical bisheterocyclics) are characterized from the rigorous analysis of their various spectroscopic parameters. The antibacterial and antifungal examinations of the prepared compounds have also been carried out to investigate their antimicrobial properties.