

SYNOPSIS

The dissertation entitled, "SYNTHESIS OF SOME NEW PHENOTHIAZINE 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. Chapter - I deals with an introduction to the subject, a brief review of the literature on the phenothiazines and the scope of the present work, Chapter-II includes experimental part, spectral interpretation and characterisation data of compounds. Chapter-III is on evaluation of antibacterial activity of synthesised compounds, results and discussion.

CHAPTER- I

This chapter describes phenothiazine and its substituted derivatives as an interesting class of heterocyclic compounds having a wide range of applications. It includes a brief review of the literature on the phenothiazine and its derivatives, especially N_{10} -substituted phenothiazine derivatives; with reference to their methods of synthesis and their biological importance. Many important biologically active substances constitute this series of heterocyclic compounds. The biological activities ^{such} as anti-inflammatory, antibacterial, antifungal, anthelmintic, antihistaminic, antiparkinsonian, antipsychotic, tranquillizer and antitubercular activities have been reported. In addition to these phenothiazines have industrial applications as antioxidants. Recently it

has found that N₁₀-substituted phenothiazines show some enzyme inhibitor activity. Phenothiazine derivatives have also been valuable in human medicine and in the treatment of gastro-intestinal nematodes of sheeps, cattles, horses etc. The same chapter includes the scope of the present work.

CHAPTER - II

Chapter-II deals with the experimental work. It consists of two parts. Part-I describes the details of experimental methods used for the synthesis of N₁₀-substituted carboethoxy phenothiazines, N₁₀-hydrazidophenothiazines, N₁₀-substituted five membered heterocycles. The strategy employed for the synthesis, involved the reaction of phenothiazine with halosubstituted ester in dry acetone in the presence of anhydrous potassium carbonate to form N₁₀-substituted carboethoxy phenothiazines followed by nucleophilic substitution with hydrazine hydrate to give corresponding N₁₀-hydrazido phenothiazines, which when reacted with phenyl isothiocyanate furnished N₁₀-substituted phenothiazine thiosemicarbazides which form the key intermediates in the synthesis of desired heterocycles. The thiosemicarbazides on cyclisation with sodium hydroxide, iodine in potassium iodide and phosphoric acid furnished the targetted N₁₀-substituted five membered heterocycles (scheme I)

Part-II describes the synthesis of N₁₀-sulphonamido phenothiazine derivatives. N₁₀-chloroacetyl phenothiazine and sulphonamides were synthesised by reported methods. Various sulphonamides on condensation with N₁₀-chloroacetyl phenothiazine gave desired N₁₀-sulphonamido phenothiazines. All the compounds reported in Part I and Part II were characterised by M.P.; elemental analysis, UV, IR and PMR spectral studies.

CHAPTER - III

Chapter III deals with the evaluation of the antibacterial activity of the compounds. On the basis of the screening results the relation between the structure and their antibacterial activity has been established.

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SCHEME-1

