



STUDIES OF SOME NEW THIAZOLE CLUBBED SCHIFF BASE AND 4-OXO-THIAZOLIDINE DERIVATIVES AS POTENT ANTIMICROBIAL, ANTITUBERCULAR AND ANTICANCER AGENTS

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Abstract: Thiazole clubbed three new series of Schiff bases (**3a-h**), 2,3-disubstituted-4-oxo-thiazolidines (**4a-h**) and 2,3-disubstituted-5-methyl-4-oxo-thiazolidines (**5a-h**) were synthesized by using Dean-Stark water separator. The structures of the synthesized compounds were confirmed on the basis of FTIR, ¹H-NMR, ¹³C-NMR, LCMS data as well as elemental analysis. The prepared analogues were screened for their preliminary *in vitro* antimicrobial activity, antitubercular activity and anticancer activity. Majority of the compounds showed excellent antimicrobial activity against the tested strains. A few of them displayed significant antitubercular activity compared with the first line drugs. Some of the compounds exerted significant anticancer activity.

Keywords: 2-Amino-5-methylthiazole, Schiff base, 4-oxothiazolidine, biological activity.

Introduction

Cancer is the uncontrolled growth of cells coupled with malignant behaviour, invasion and metastasis which is the global health problem leading cause of human death in developing as well as advance countries after cardiovascular diseases¹. Thus inventions of novel structures that can be potentially active and less toxic are become a major challenge for medicinal chemistry researchers worldwide².

2-Amino-5- methyl-thiazole moiety was reported to possess various broad spectrum biological activities³⁻⁶. Therefore in view of these findings, it was thought of interest to undertake the synthesis of Schiff base and 4-thiazolidinones having a 2-amino-5-methylthiazol moiety with hoping that these compounds may possess certain biological activity.

The study of Schiff base has been rapid increasing because they shows excellent characteristics such as structural similarities with natural biological substances, relatively simple preparation procedures and the synthetic flexibility that enables design of suitable structural properties. Schiff bases have been used as synthons in the preparation of a number of industrial and biologically active compounds like formazans⁷, 4-thiazolidinines⁸, benzoxazines⁹, and so forth, via ring closure, cycloaddition, and replacement reactions¹⁰.