MINOR RESEARCH PROJECT IN CHEMISTRY

Submitted to University Grants Commission

PRINCIPAL INVESTIGATOR

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PROJECT TITLE

"Synthesis of new Pyrimidine derivatives as a possible anti-infectious agent"

Summary

Appreciable numbers of heterocyclic compounds containing Nitrogen, Sulphur and Oxygen atoms, obtained from nature or laboratory synthesis have turned out to be potential chemotherapeutic and pharmacotheraputic agents. Various useful analogs with improved therapeutic properties can be obtained from a single lead compound by structural modification. The same principle is applicable to the heterocycles.viz Thiopyrimidine, 1,5-benzothiazines, thiazoles, lactums, thiazolidinones and hetryl chalcones.

A literature survey revealed that these heterocycles possesses different types of biological activities like antidiabetic, antimicrobial, anthelmintic, anti-inflamatory, analgesic, anticonvalsant, anticancer etc. and therefore some of them are used as medicaments. Hence more attention is directed towards the construction of new heterocycles and the development of efficient synthetic routs. Keeping this objective in mind the synthesis of new heterocycles was planned with the hope to obtain the molecule with high potency and efficacy. It was also proposed to modify the synthetic routes using moderate, ecofriendly, simple economic and feasible protocols to improve the quality and yields of the products.

The present work was therefore accordingly planned, executed and presented in the form of report entitled "Synthesis of new Pyrimidine derivatives as a possible anti-infectious agent" The work includes the syntheses of chalcones, thiopyrimidine and fused thiazolidinones. The details of synthetic work and characterization of synthesized molecules and the intermediates have been presented in the report in four parts.

Part I gives the literature survey and scope of the work related to the Sulphur,Nitrogen and /or Oxygen containing heterocycles.

Part II covers the synthesis of 1-(Substituted phenyl)-3-(substituted phenyl) prop-2-en-1-ones. Attempts have been made to condense the substituted aldehydes and ketones to obtain desired chalcones.

Part III consists of synthesis of 6-(Substituted phenyl)-3, 4-dihydro-4(substituted phenyl) pyrimidines-2(1H)-thiones. These pyrimidinones were obtained from condensation of chalcones with thioureas.

Part IV deals with the synthesis of 7- (Substituted phenyl -8, 8a-dihydro-5-substituted phenyl)-2H-thiazolo [3, 2-a] pyrimidines -3(5H)-ones. These were synthesized in one pot by condensing substituted cyclic thioureas with chloroacetic acid to obtain fused thiazolidinones.

The report significantly contributes to synthesis of Sulphur,Nitrogen and or Oxygen heterocyclic analogs by employing convenient /modified synthetic routes. The most of the molecules prepared are having active pharmacophores like fluoro, difluoro, methoxy, chloro-fluro as substituents. The synthesized molecule and the intermediates have been obtained in pure form and are well characterized by using spectral data. Attempts have been made to provide modified routes so as to enhance the rates and yields of the products.