

EXECUTIVE SUMMARY OF THE REPORT

1. Title of the Minor Research Project: **“Synthesis Characterization and Biological Activities of Some Bioactive Heterocycles.”**
2. UGC Reference No. : 47-298/12 (WRO)
3. Name and address of the Principal investigator: Dr. Narwade Sanjay Karbhari, Department of Chemistry, Shri Anand College of Science, Pathardi, Dist.- Ahmednagar, Pin- 414 102 (M.S.)

The present work entitled “Synthesis, Characterization and Biological Activities of Some Bioactive Heterocycles” describes the conventional and non-conventional syntheses of some varied classes of heterocyclic compounds such as salicyloyl pyrazoles, and benzoxazoles.

Referring literature of the above compounds it was found that they are associated with various physiological and biological properties and thus find importance in medicine. Taking this fact into consideration it was thought worthwhile to synthesize such compounds and study their biological activities.

Number of heterocyclic compounds containing nitrogen and sulfur exhibit a wide range of biological activities. Various 1,2,3-thiadiazole possess antibacterial and antifungal activities.

Triazoles are known for their fungicidal, antimycotic, bactericidal activities. Azole nucleus has been reported with variety of biological activities such as antimicrobial, antitubercular and anticonvulsant activities. Several azoles exhibit anti-tuberculostatic, anti-inflammatory, analgesic, antipyretic and anticonvulsant activities.

3-Formylchromone is a versatile synthon and can be converted into different heterocyclic compounds. The effective facile method for synthesis of 3-formylchromones was developed by Nohara et al. The condensation reactions of 3-formylchromone with compound containing active methylene groups are well known in literature and the condensation products showed significant biological activities.

Benzoxazoles exhibit wide spectrum of biological activities like anti-inflammatory, antimicrobial and antitumor.

Due to biological activities associated with these compounds in the present work we have synthesized salicyloyl pyrazoles and benzoxazoles and screened them for antimicrobial activities.

The 2-hydroxyacetophenones and 3-formylchromones were synthesized by well established methods. 2-Hydroxy acetophenones were synthesized by Fries rearrangement; 3-Formylchromones were synthesized by using effective and facile method developed by Nohara by application of Veilsmeir-Haack reaction.

Microwave irradiation and ultrasound mediated synthesis are one of the leading non-conventional energy sources. The number of publications and reviews have described the advantages and the use of microwave irradiation and ultrasound mediated synthesis over conventional method.

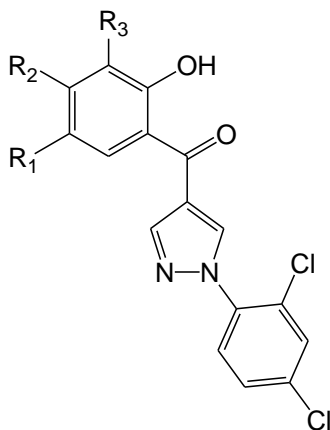
All the recorded melting points were determined in open capillary tubes and are uncorrected. The structures of all compounds were assigned on the basis of IR, NMR and mass spectrum. Spectral analysis is done on the basis of literature. Purity of the compounds was checked by TLC on silica gel G plates.

The present work is broadly divided into five parts.

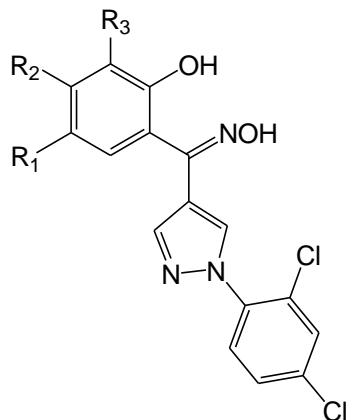
PART-I: Non-conventional and conventional synthesis of some chlorinated heterocycles.

SECTION-A This section describes Importance of ultrasound waves in organic synthesis.

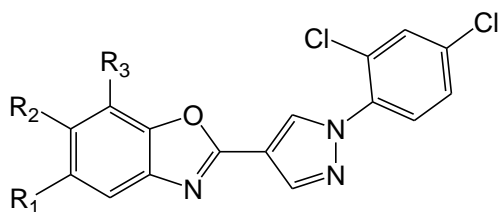
SECTION-B This section describes the Conventional and microwave synthesis of (1-(2,4-dichlorophenyl)-1*H*-pyrazol-4yl)(2-hydroxyaryl)methanone.



SECTION-C This section describes the Synthesis of (1-(2,4-dichlorophenyl)-1*H*-pyrazol-4yl)(2-hydroxyaryl)methanoneoxime.



SECTION-D This section describes the conventional and ultrasound synthesis 2-(1-(2,4-dichlorophenyl)-1*H*-pyrazol-4-yl)benzo[*d*]oxazole.



PART-II: - Biological activities of some of the synthesized compounds.

This part describes the antibacterial and antifungal activities of some of the synthesized compounds.