

# *Preface*

Heterocyclic compounds including s-triazines, pyrazoles, isoxazoles and pyrimidines have been extensively employed in the literature as resourceful nucleus for the synthesis of a vast array of fused heterocyclic compounds. Because of their synthetic and medicinal importance, community of Chemists & Biologists has paid much more attention towards their utilization. Various research papers and review articles have appeared in the literature on its applications in the synthesis of new compounds. This inspired us to check the probability of using chalcones and all the above mentioned heterocyclic compounds as resourceful synthons for preparing a large number of hetero ring annelated pyrazoles, isoxazoles, pyrimidines and s-triazine derivatives. The present thesis explains the synthesis of a new string of hetero ring annelated biologically dynamic heterocycles from the corresponding chalcones of s-triazines.

This study has been presented in the thesis in five chapters. The chapter wise details are given below:

## ***Chapter-1: Review of Literature***

Chapter-1 gives a concise introductory idea for the synthesis & reactivity of s-triazines, chalcones, pyrazoles, isoxazoles, pyrimidines, simazines & atrazines and presents a comprehensive review of the methods which have appeared in the literature for their synthesis. At last, an outline of the present work has also been given in this chapter.

115 references have been given at the end of the chapter.

## ***Chapter-2: Synthesis of pyrimidine substituted chalcones of s-triazines***

Chapter-2 describes the synthesis of corresponding chalcone derivatives of s-triazines. Total numbers of compounds synthesized in this chapter are listed below:

- | <b>S. No.</b> | <b>Name of the Compounds</b>   |
|---------------|--|
| 1.            | 4,6-dichloro-N-(pyrimidine-2-yl)-1,3,5-triazine-2-amine                                  |
| 2.            | 6-chloro-N <sub>2</sub> ,N <sub>4</sub> -di (pyrimidine-2-yl)-1,3,5-triazine-2,4-diamine |

3. Preparation of 2,4,6-tris-(2-aminopyrimidine)-s-triazine
4. 2, 4-bis-(2-aminopyrimidine)-6-(4-acetylphenylamino)-s-triazine
5. (E)-1-(4-(4,6-bis(pyrimidine-2-ylamino)-1,3,5-triazine-2-ylamino)phenyl)-3(pyridine-2-yl)prop-2-en-1-one
6. 1-(4-(4-(chloromethyl)-6-(pyrimidine-2-ylamino)-1,3,5-triazine-2-ylamino)phenyl) ethanone
7. 1,1'-(4,4'-(6-(pyrimidine-2-ylamino)-1,3,5-triazine-2,4-diyl)bis(azanediyl)bis(4,1-phenylene)di- ethanone
8. (E)-3-(pyridine-3-yl)-1-(4-(4-(4-(E)-3-(pyridine-4-yl)acryloyl)phenylamino)-6-(pyrimidine-2-ylamino)-1,3,5-triazine-2ylamino) phenyl)prop-2-en-1-one

33 references have been given at the end of this chapter.

### ***Chapter-3: Synthesis of pyrazoles & isoxazoles containing pyrimidine substituted s-triazines***

Chapter-3 describes the synthesis of s-triazine fused pyrazoles and isoxazoles derivatives of corresponding chalcocnes by the reaction of hydroxylamine hydrochloride and hydrazine hydrate respectively. All the synthesized compounds are listed below:

#### **S. No. Name of the Compounds**

1. (R) -N2 - (4-(pyridine-2-yl)-4H-1,2-oxazin-4-yl)phenyl)-N4,N6-di(pyrimidin-2-yl)-1,3,5 triazine-2, 4, 6-triamine
2. N2- (4- (6-(pyridine-2-yl)-1,4-dihydropyridazin-4-yl)phenyl)-N4,N6-di(pyrimidin-2-yl)-1,3,5-triazine-2,4,6-triamine
3. N2- (4-(5-(pyridine-3-yl) isoxazol-3-yl) phenyl)-N4-(4-(5-(pyridine-2-yl) isoxazol-3-yl) phenyl) -N6- (pyrimidin-2-yl)-1,3,5-triazine-2,4,6-triamine
4. N2-(4-(5-(pyridine-3-yl)-1H-pyrazol-3-yl) phenyl) -N4- (4-(5-(pyridine-2-yl)-1H-pyrazol-3-yl)phenyl)-N6-(pyrimidin-2-yl)-1,3,5-triazine-2,4,6-triamine

36 references have been given at the end of this chapter.

#### ***Chapter-4: Synthesis of Pyrimidine substituted derivatives of s-triazines***

Chapter-4 describes the synthesis of pyrimidine derivatives by the reaction of corresponding chalcones with urea, thiourea, and guanidine nitrate respectively. The synthesized compounds are listed below.

##### **S. No. Name of the Compounds**

1. 4 - (4-(4, 6-bis(pyrimidin-2-ylamino) -1, 3, 5-triazin -2-ylamino) phenyl) - 6- (pyridine-2-yl) pyrimidin-2-ol  
4-(4-(4,6-bis(pyrimidin-2-ylamino)-1, 3, 5-triazin-2-ylamino)phenyl)-6-
2. (pyridine-2-yl) pyrimidin-2-thiol
3. N<sup>2</sup>-(4-(2-amino-6-(pyridine-2-yl)pyrimidin-4-yl)phenyl)-N<sup>4</sup>,N<sup>6</sup>- di(pyrimidin-2-yl)-1, 3, 5-triazine-2, 4, 6-triamine
4. 6,6'-(4,4'-(6-(pyrimidin-2-ylamino)-1,3,5-triazine-2,4-diyl) bis(azanediy) bis (4, 1-phenylene) bis(4-(pyridine-2-yl) pyrimidin-2-ol)
5. 6,6'-(4,4'-(6-(pyrimidin-2-ylamino)-1,3,5-triazine-2,4-diyl)bis (azanediy) bis(4,1-phenylene) bis(4-(pyridine-2-yl) pyrimidin-2-thiol
6. N<sup>2</sup>, N<sup>4</sup>-bis(4-(2-amino-6-(pyridine-2-yl)pyrimidin-4-yl)phenyl)-N<sup>6</sup>- (pyrimidin-2-yl)-1, 3, 5-triazine-2, 4, 6-triamine

30 references have been given at the end of this chapter.

#### ***Chapter-5: Evaluation of antimicrobial activity of synthesized compounds***

Chapter-5 describes the anti-microbial of the compounds synthesized in chapters 2 to 4 against *Escherichia coli* (MTCC 476), *Basillus subtilis* (MTCC 1272), *Aspergillus niger* (MTCC 281) and *Fusarium solani* (MTCC 2480) using Ciprofloxacin and Flucanazole as reference compounds by employing the standard disc diffusion assay method at concentrations 100, 200 & 400µg/ml. Anti-inflammatory screening of certain compounds was also done by taking Indomethacin as reference drug.

14 references have been given at the end of this chapter.

#### ***Summary:***

A chapter wise summary of the research work has been given at the end of thesis.