GREEN CHEMISTRY APPROACH TO THE SYNTHESIS OF PHARMACEUTICALLY IMPORTANT AZA-HETEROCCYLES

S.B. Chheda, S.R. Pednekar

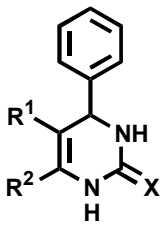
Organic Chemistry Research Lab, Ramnarain Ruia College, Mumbai, India

shardulc@gmail.com

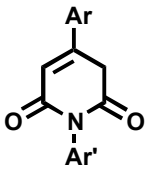
Green chemistry is the design of chemical products and processes that are environmentally benign. Green chemistry encompasses all aspects and types of chemical processes that reduce negative impacts to human health and the environment.

In continuation of our constant endeavor to search for convenient and eco friendly protocols for the preparation of diversely substituted aza-heterocycles possessing biological activities, we got interested in the use of Green chemistry processes.

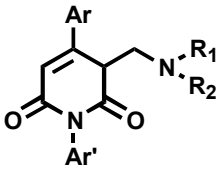
The present investigation was an effort towards Green chemistry approach in the synthesis of pharmaceutically interesting aza-heterocycles. We carried out multicomponent synthesis of substituted dihydropyrimidininones **1**, by using Grindstone chemistry technique as well as water as eco-friendly solvent. The multifunctionality of dihydropyrimidininones was further exploited to obtain hitherto unknown aza-heterocycles. Water based Mannich reaction was carried out on imide of the type **3** which contains active methylene group. Water based Mannich reaction was also carried out on coumarins. The advantages of water based Mannich reactions were well studied using different amines.



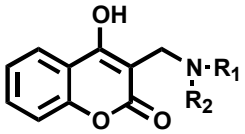
1



2



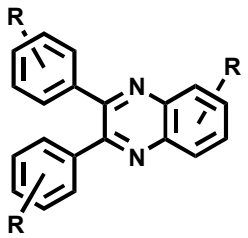
3



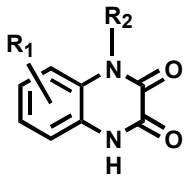
4

Quinoxalines and dihydropyridines constitute a major class of heterocyclic compounds with variety of applications. There are various reports of their synthesis. As part of our investigation, we report

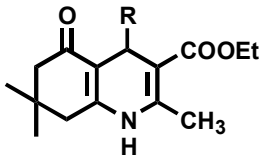
herein the convenient and eco-friendly synthesis of the above mentioned compounds of the type **5**, **6**, **7** and **8** using Green chemistry principles.



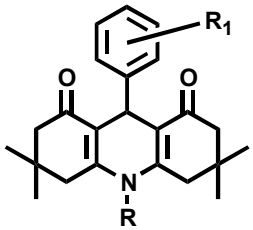
5



6



7



8

The noteworthy feature of our investigation was the development of environmentally benign and efficient processes which not only reduced hazardous waste and reaction times but also gave higher yields.