

Abstract

Heterocyclic compounds containing nitrogen is the one of the most important biologically active compounds. Their molecules incorporate the core structure of some antiviral, antibacterial, anticancer, antimalarial and antioxidant drug.

In the present research work a series of five and six membered heterocycle containing nitrogen derived from chalcone were synthesized using sonochemistry and microwave approach as powerful tools for acceleration of both chalconization reaction and hetero-synthesis. These heterocycles include 2-amino 4,6-diaryl pyrimidine, 3,5-diaryl pyrazole, 3,5-diaryl isoxazole have synthesised from 1,3-diaryl-1,one-3-en. The enones were made in basic condition and under sonication for 1 hour; this condition has given moderate to good percentage yield of 20-99.

The synthesis of heterocycles was carried out using a combination of ultrasound and microwave irradiation. The reaction was performed using basic catalyst, and ethanol as solvent. A moderate to good yield have afforded in a period of time between 10-30 minutes.

This work describes a novel approach of combining ultrasound and microwave irradiation in heterocyclization reactions to overcome solubility constraints and long reaction times.

Furthermore, the mechanism of reaction has investigated by the isolation and characterization of two isoxazole intermediates, this investigation has demonstrated that the products were formed through kinetic process.