

Green Multicomponent Synthesis of Novel Heterocyclic Compounds using Fruit Juice as Biocatalyst

Susheel Gulati and Rajvir Singh

Department of Chemistry CCS Haryana Agricultural University, Hisar-125004 (Haryana)
E-mail: sgbhuna108@gmail.com

Abstract—In recent years, organic research is mainly focused on the development of greener and environmentally friendly process which involve the use of alternative reaction media to replace toxic and expensive hazardous catalysts. Multicomponent reactions (MCR) are accepted as an important methods for the synthesis of natural and medicinally important heterocyclic compounds. These types of reactions avoid cost and time consuming process for the purification of various precursors and isolation of intermediates. Now a days multicomponent reactions are important for academia and for industry to design less toxic and more environmentally friendly routes. Heterocyclic compounds possess a cyclic structure with two or more different kinds of atoms in the ring. These types of compounds are widely distributed in nature very important to life to life, playing a vital role in the metabolism of all living cells. Coumarin derivatives are natural products widely present in plant kingdom and their main applications are as fragrance, pharmaceuticals and agrochemical industry. The imidazole nucleus is a rich source for getting biologically important organic molecules. Compounds containing imidazole moiety show a range of pharmacological properties and play important roles in biochemical processes. Several approaches were reported for the synthesis of coumarins as well as imidazoles which were developed either by use of expensive catalyst or by some hazardous organic solvents. Therefore a simple, efficient and green chemistry for one pot coumarins and imidazoles synthesis under mild conditions is required. The method shown here involves the use of fruit juice which act as biocatalyst in the synthesis of heterocyclic compounds. The growing intrest in fruit juice is mainly because of environmentally benign character, non hazardous and cost effectiveness. Compounds were characterized by spectroscopic and analytical techniques. The compounds will be evaluated for their biological activity. The data will be presented in paper.

Keywords: Coumarins, Imidazoles, Fruit juice, Biocatalyst, Organic synthesis.