

A Comprehensive Study on Synthesis of Imidazole Using Novel Techniques

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Abstract: Imidazole is the heterocyclic 5-membered ring structure, out of which three are carbon and the Remaining two are nitrogen, arranged at 1 and 3 positions. It is the constituent of several natural Compounds like histamine, histidine, biotin, alkaloids and nucleic acid and a very important Class among the medicinal compounds. The unique structural feature of imidazole ring with desirable electron-rich characteristic is beneficial for imidazole derivatives to readily bind with a variety of enzymes and receptors in biological systems through diverse weak interactions, thereby exhibiting broad bioactivities. Thus, increasing research is being carried out on the synthesis of imidazoles and their derivatives, mainly because of the application of imidazoles in pharmaceutical and medicinal research. Keeping sustainability in mind, researchers are developing synthetic pathways for the synthesis of imidazoles and their derivatives by employing techniques involving green tools, thus leading to sustainable pathways. In this review, we aim to compile such synthetic methodologies involving green tools for the synthesis of imidazoles. The review will cover the synthetic reactions that involve green tools such as microwave irradiation and synthesis under green catalyst or a without catalyst. Imidazole-based compounds with antibacterial, anti-Inflammatory, antidiabetic, antiparasitic, antituberculosis, antifungal, antioxidant, antitumor, Antimalarial, anticancer, antidepressant and many others make up the therapeutic arsenal and New bioactive compounds proposed in the most diverse works. Large number of imidazole derivatives have been are Being developed for different therapeutic actions, therefore this article aims to review the work Reported on the synthesis of imidazole derivatives using microwave reactions as a modern Method for synthesis.

Keywords: Imidazole, Synthesis, Microwave Techniques, Green Chemistry, Drug Discovery, Microwave Techniques, Green Chemistry.

