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Synthesis and Novel 4-(1H-Benzo[*d*] Imidazol-2-yl)-2H-benzo[*b*][1,4]oxazin-3(4*H*)-one and their Anti Microbial Activities

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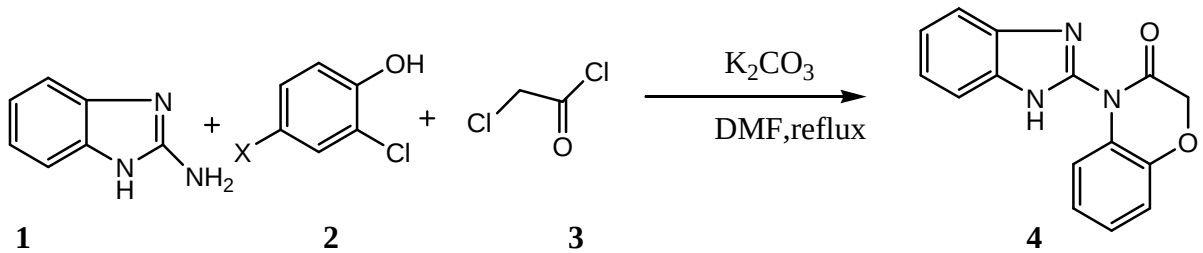
Abstract

Multi-component reactions (MCRs) have been frequently used by synthetic chemists as a facile mean to generate molecular diversity from bifunctional substrates that react sequentially in an intramolecular fashion. Designing such types of MCRs that achieve the formation of multiple bonds in a single operation is one of the major challenges in modern organic synthesis. As such processes avoid time consuming and costly purification processes, as well as protection-deprotection steps, they are inherently more environmentally benign and atom economic. They provide a powerful tool towards the one-pot synthesis of diverse and complex compounds as well as small and drug-like heterocycles[1].

Benzo[b][1,4]oxazin-3(4H)-one derivatives are shown to exhibit a wide range of pharmacological activities such as anti-microbial, antiulcer, antipyretic, antihypertensive and antirheumatic[2-3]*. Here, we report, a one-pot synthesis of 4-(1H-Benzo[d] Imidazol-2-yl)-2H-benzo[b][1,4]oxazin-3(4H)-one via Smiles rearrangement. The three component reaction of 2-amino Benzimidazole **1**, o-chlorophenols **2**, and chloroacetyl chloride **3** in the presence of K_2CO_3 in dry DMF at 100 ^{0}C afforded 4-(1H-Benzo[d] Imidazol-2-yl)-2H-benzo[b][1,4]oxazin-3(4H)-one **4** in 76-88% yields by Smiles rearrangement.*



1 **2** **3** **4**

The structure of realized product (**4**) has been established on the basis of spectral (IR, ^{1}HNMR, ^{13}CNMR, MS) and by analytical data. In conclusion an efficient atom-economical and simple method for the preparation of library of 4-(1H-Benzo[*d*] Imidazol-2-yl)-2H-benzo[*b*][1,4]oxazin-3(4*H*)-one (**4**) has been described using readily available starting materials.

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