

Abstract

The purpose of our research project is the synthesis of hybrid derivatives of 1,3,4-oxadiazole-2-thiole. Initially, 2-(4-Nitrophenyl)acetate (**2**) and 2-(4-Nitrophenyl)acetohydrazide (**3**) were synthesized. After that, 1,3,4-oxadiazole-2-thiole (**4**) was prepared by reacting 2-(4-Nitrophenyl)acetate and 2-(4-Nitrophenyl)acetohydrazide with the help of calculated amount of EtOH, CS₂ and KOH under constant refluxing for 20 hours. . Finally, the targeted compounds were produced through the reaction of 1,3,4-oxadiazole-2-thiol (**4**) with substituted-aryl halides in the presence of polar aprotic solvent, DMF by utilizing catalytic amount of LiH as an activator. The structures of the all newly formed compounds were corroborated through IR, ¹H-NMR and ¹³C-NMR analytical techniques. Novel compounds were further evaluated for inhibitory potential against different enzymes; alpha-glucosidase and alpha amylase. These compounds were displayed potent anti-bacterial and antifungal activity against different species of bacteria and fungi respectively.