Abstract:

The targeted molecules were synthesized under controlled reactions. In first step, Ethyl 2-(4-nitrophenyl) acetate **(2)** was synthesized by the reaction of 2-(4-nitrophenyl) acetic acid **(1)** with absolute ethanol and sulfuric acid. The reactants were taken in 500ml round bottom flask and refluxed for 11-12 hours until the reaction completed maximum which was then supervised through TLC. The reaction then neutralized by 10% sodium carbonate solution. The white crystals of ester ware collected. The ester formed was then converted to 2-(4-nitrophenyl) acetohydrazide **(3)** by the reaction with methanol and hydrazine monohydrate. The reaction was refluxed for 15 hours at room temperature. Methanol was evaporated after the completion of reaction. The precipitates of hydrazide were collected and dried. Hydrazide was taken in flask with ethanol and potassium hydroxide. Carbon disulfide was introduced. That reaction was refluxed for 18 hours and the product 5-(4-nitrobenzyl)-1,3,4-oxadiazole-2-thiol **(4)** was synthesized. pH was adjusted by adding HCl. The cyclized precipitates were collected. The oxadiazole was coupled with different substituted electrophiles in the presence of LiH and DMF and the derivatives 2-Chlorobenzyl 5-(4-nitrobenzyl)-1,3,4-oxadiazol-2-yl sulfide (**6a**), 4-Chlorobenzyl 5-(4-nitrobenzyl)-1,3,4-oxadiazol-2-yl sulfide (**6b**) were synthesized. Bioactivities of these derivatives were determined against bacteria and fungi. Both derivatives show considerable inhibition against different enzymes. The derivatives were characterized by using ^{1}H-NMR and ^{13}C-NMR.