ABSTRACT

Oxygen and nitrogen containing heterocyclic compounds were the subject of interest. This class of heterocyclic compounds exhibited a variety of biological and pharmaceutical activities. The current research work has been designed for the synthesis of 5-(1-((4-Bromophenyl)sulfonyl)piperidin-4-yl)-1,3,4-oxadiazole-2-thiol **(3)** by using conventional approach. This approach comprises of three steps. First steps involve the reaction of 4-Bromobenzene-1-Sulfonyl chloride **(a)** with ethyl piperidine-4-Carboxylate **(b)** to form ethyl 1-((4-bromophenyl)sulfonyl)piperidine-4-carboxylate **(1)** which is then yielded 1-((4-Bromophenyl)sulfonyl)piperidine-4-carbohydrazide **(2)** by treatment with the hydrazine in the second step of reaction. Third step involves the formation of 5-(1-((4-Bromophenyl)sulfonyl)piperidin-4-yl)-1,3,4-oxadiazole-2-thiol **(3)** by the reaction of 1-((4-Bromophenyl)sulfonyl)piperidine-4-carbohydrazide **(2)** with carbon disulfide and potassium hydroxide. In the presence of dimethyl formamide and lithium hydride, different derivatives were formed via alkyl or aryl substituents. The yields obtained are 70-80%. All the structures were elucidated by IR, ^{1}H-NMR and ^{13}C-NMR. The antibacterial screening against certain bacterial strains of gram-negative and gram-positive bacteria shows that all the compounds possess moderate potential against the microbes.