ABSTRACT

Synthetic heterocyclic compounds surrounded with oxygen and nitrogen were helpful for biological and pharmaceutical applications to fight against toxic microorganism. The current research work was designed for the synthesis of derivatives of 5-(1-(4-bromophenylsulfonyl)piperidin-4-yl)-1,3,4-oxadiazole-2-thiol, **(3)** by following a protocol. The reaction of 4-bromobenzenesulfonylchloride **(a)** treated with ethyl piperidine-4-carboxylate **(b)** produced ethyl 1-(4-bromophenylsulfonyl)piperidine-4-carboxylate **(1)**, which was converted into its hydrazide using monohydrated hydrazine and methanol as a solvent. Further, 1-(4-bromophenylsulfonyl)piperidine-4-carbohydrazide **(2)** yielded 5-(1-(4-bromophenylsulfonyl)piperidin-4-yl)-1,3,4-oxadiazole-2-thiol **(3)**, on reacted with carbon disulfide in the presence of potassium hydroxide. Through parent compound different alkyl or aryl series of derivatives were formed in the presence of Dimethyl formamide (DMF) and lithium hydride (LiH) as an activator. All the derived compounds were structurally elucidated by spectral techniques IR, ^{1}H-NMR and ring formation of 1,3,4-oxadiazole moiety was confirmed via ^{13}C-NMR. The prepared derivatives were screened against two Gram-positive and three Gram-negative bacterial strains to evaluate their antibacterial potential with ciprofloxacin as a reference standard. It was concluded that the disubstituted oxadiazole moiety having azacyclohexane nucleus will increase the activity of the molecules.