ABSTRACT

Discovery of the new drugs may be a commercial or public health success. Heterocyclic compounds due to presence of heteroatom in their ring become a versatile class of compounds from synthetic as well as their mode of action on living organisms. Oxadiazole has been synthesized by a series of steps with an aim to synthesize various biologically active derivatives. In the first step benzene sulfonyl chloride (**1**) was reacted with ethyl nipacotate (**2**) in the aqueous medium to produce ethyl 1-(phenylsulfonyl)piperidine-3-carboxylate (**3**). In the second step of synthesis compound (**3**) was reacted with hydrazine to give a corresponding hydrazide (**4**) by using methanol as a solvent. In the third step hydrazide (**4**) was refluxed with CS_2 in the presence of potassium hydroxide to give 5-(1-(phenylsulfonyl)piperidin-3-yl)-1,3,4-oxadiazole-2-thiol (**5**). Final step based on the synthesis of derivatives (**6a-d**) of 1,3,4-oxadiazole by reacting the compound (**5**) with different alkyl halides in the presence of lithium hydride using dimethylformamide (DMF) as a solvent. All the synthesized compounds were then evaluated and characterized through different spectral techniques such as ^{1}H-NMR and IR.^{1}H-NMR spectra was used to verify the structural formula by integrating the number of protons. While through IR analysis confirmation of the main functional groups present in different compounds was achieved. All newly synthesized compounds were evaluated for anti-urease and α-glucosidase inhibitory activity. The results showed weak to moderate inhibition potential of these synthesized compounds. Urease inhibitory and α-glucosidase inhibitory activity is exhibited in the order: compound **6d** > compound **6a** > compound **6b** > compound **6c** and compound **6c** > compound **6b** > compound **6d** > compound **6a** respectively.