Abstract

Heterocyclic cores have attracted the attention of chemists for their high potential and effective results in the field of pharmacology. Among five membered heterocycles, 1,3,4-oxadiazole is considered to be the most effective pharmacophore for the development of synthetic drugs due its potent pharmaceutical applications. By taking in view of our aim and objectives we have synthesized an array of oxadiazole hybrids. The compound ethyl 1-(phenylsulfonyl)piperidine-3-carboxylate (**3**) was synthesized by adding benzene sulfonyl chloride (**1**) in ethyl piperidine-3-carboxylate (**2**) under the action of 10 % Na_2CO_3. Compound **3** was refluxed 4 hrs with hydrazine to form desired carbohydrazide (**4**). 1-(Phenylsulfonyl)piperidine-3-carbohydrazide was cyclized by adding CS_2 in basic media to form 5-(1-(phenylsulfonyl)piperidin-3-yl)-1,3,4-oxadiazole-2-thiol (**5**). Different derivatives **5a-e** were synthesized by reacting (**5**) with alkyl/aryl halides in the presence of lithium hydride and DMF. All the synthesized compounds were characterized by using different spectral techniques such as ^{1}H-NMR, IR and EI-MS. They were also evaluated for anti-urease and alpha glucosidase activity. Hybrids **5a** and **5b** exhibit maximum potential against urease enzyme due to the existence of *S*-substituted octyl and benzyl substituents while other displayed less inhibition. By using acarbose as a reference drug synthesized hybrids was evaluated for α-glucosidase activity. Among them 5e revealed highest % inhibition which is comparable with reference drug.