Abstract

Compounds consisting of hexahydropyridine and oxadiazole rings are biologically active and have a broad spectrum of pharmaceutical activities. This research aims to study and elucidate biological active compounds. When oxadiazole reacts with piperidine nucleus a novel compound was produced which exhibits a wide scale of pharmaceutical applications including antibiotic and enzyme inhibition activity. A novel compound named as 2-[(4-iodobenzyl)thio)-5-{1-((4-methoxyphenyl)sulfonyl]piperidin-4-yl}-1,3,4-oxadiazole is synthesized that show inhibition against the enzyme. The compound was synthesized by using 4-methoxybenzene-1- sulfonyl chloride and ethyl iso-nipecotate. The compound obtained was ethyl 1-[(4-methoxyphenyl) sulfonyl] piperidine-4-carboxylate, it further react with hydrazine to give another compound named 1-[(4-methoxyphenyl) sulfonyl] piperidine-4-carbohydrazide. Cyclization of the above compound occurs a compound 5-{1-[(4-methoxyphenyl) sulfonyl] piperidin-4-yl}-1, 3, 4-oxadiazole-2-thiol was synthesized. Treating the compound with electrophile reagent i.e. DMF and LiH, a derivative (5a) was synthesized. The compound is a white amorphous solid with 86% yield. The purity is each compound during synthesis was checked by thin layer chromatography. The structure of compounds was elucidated by using infrared (IR), ^{13}C-NMR, and ^{1}H-NMR spectroscopy techniques. The compound shows good inhibition activity against the α-glucosidase enzyme with reference to acarbose. The compound showed the least cytotoxicity effect.