ABSTRACT

In the field of medical sciences, sulfa drugs have extensive biological activities. The term sulphonamide had been generated from the generic name of the derivatives of para amino benzenesulphonamides. These compounds include many medicinal drugs, containing many kinds of pharmacological agents as antibacterial, anti-microbial anti-inflammatory, anti-cancer, antitumor, diuretic, hypoglycemic, anti-thyroid, anti-viral, anti-tumor, and inhibition capability of several enzymes like cysteine protease, HIV protease, carbonic anhydrase and cyclohydrogenase. As the time passes, microbes become more disastrous as they have developed resistance against the antibiotics. So there is a need to produce highly efficient antibiotics that's why a scheme has been designed for synthesizing *N*-(4-methoxyphenethyl)-4-methyl-*N*-(un/halogenated-benzyl)benzenesulphonamides that can be used as an drug against microbial diseases effectively. In the present study, a compound *N*-(4-methoxyphenethyl)-4-methylbenzenesulphonamide **(3)** has been synthesized by the nucleophilic reaction of 4-methoxyphenethylamine with 4-methylbenzenesulfonyl chloride in the presence of aqueous medium at pH-9 after washing and drying of the precipitates. Then, the synthesized compound (3) was further reacted with un/halogenated benzyl halides (4a-e) in the presence of solvent i.e., DMF and activator i.e., LiH to produce *N*- (4-methoxyphenethyl)-4-methyl-*N*-(un/halogenated benzyl)benzenesulphonamides **(5a-e).** The structure of the synthesized derivatives was characterized by ^{1}H-NMR, ^{13}C-NMR and IR spectroscopic analysis techniques. All the derivatives were further assessed for antibacterial and hemolytic activities. The derivative **(5d)** showed the highest value for antibacterial activity relative to *Ampicillin* against *Bacillus subtilis* whereas the derivative **(5e)** showed the highest value for anti- bacterial activity relative to *Ampicillin* against *Escherichia coli.* The less cytotoxicity of all the derivative compounds is also confirmed by the hemolytic potential. This implies their utilization as less cytotoxic agents and their screening further as antibacterial agent.