ABSTRACT

Piperazine is useful for the synthesis of many groups of drugs. The original antibacterial piperazinyl compounds are synthetic antimicrobial agents that contain the piperazine group. Several derivatives of piperazinyl methanones are very effective for the treatment of various microbial diseases such as antimicrobial, anti-tubercular, antipsychotic, anticonvulsant, antidepressant, anti-inflammatory, cytotoxic, antimalarial, antiarrhythmic and antioxidant and also shows haemolytic activity. The increasing significance of piperazinyl drugs is the foremost intention of designing and synthesizing new derivative of 2-furyl-[4-(substituted-benzyl)-1-piperazinyl]methanones. In this present work, the nucleophilic substitution reaction was carried out with 2-furyl-(1-piperazinyl)methanone (**1**) and substituted benzyl (**2a-2g**), using dimethylformamide (DMF) as solvent and LiH as activator to produce various 2-furyl-[4-(substituted-benzyl)-1-piperazinyl]methanones (**3a-g**). IR, ^{1}H NMR and ^{13}C NMR spectral analysis were done to evaluate the structure of newly synthesized compounds and they were also screened for their enzyme inhibition and antibacterial activities. The compound **3e** showed highest %age inhibition against *S.typhi* compared to ciprofloxacin. The compound **3a** showed highest %age inhibition against *S. aureus* and *P.aeruginosa* compared to ciprofloxacin. The compound **3c** showed highest %age inhibition against *B. subtilis* and *E.coli* compared to ciprofloxacin. While in %age haemolytic activity, all the synthesized compounds had proved nearly nontoxic for membrane of red blood cells with low %age haemolytic values.