Abstract

This thesis describes the synthesis, characterization, antibacterial, antifungal, lipoxygenase inhibition, acetyl cholinesterase inhibition, butryl cholinesterase inhibition and antioxidants studies of a range of novel *N*- & *O*-alkylated derivatives of sulfonamides. The targeted compounds were prepared by the reaction of *p*-amino benzoic acid with *p*-toluenesulfonyl chloride and subsequent *N*-and *O*- alkylation in moderate to excellent yields.

The final products were extensively screened to investigate their antibacterial and antifungal potentials. All the derivatives were found to be active against *B. subtilis* and *E.coli*. Although, these sulfonamides did not show any significant bioactivity against fungal strains such as *aspergillus niger* and *penicillium notatum.*

The targeted compounds were also subjected to their enzyme inhibition studies against lipoxygenase, acetyl cholinesterase and butryl cholinesterase. All sulfonamides showed excellent lipoxygenase inhibition, a small number of derivatives have significant effect against acetyl cholinesterase and none of these compounds exhibited butryl cholinesterase inhibition.

Antioxidant potential of these derivatives were investigated by DPPH, FRAP and ABTS methods. Most of these compounds showed excellent antioxidant activities. The synthesized compounds were characterized using FTIR, ^{1}H NMR, ^{13}C NMR, elemental analysis and single crystal X-ray diffraction technique.