ABSTRACT

The presented research work in this dissertation comprises of synthesis, characterization, antimicrobial, hemolytic and enzyme inhibition studies of some new acetamides/sulfides bearing substituted-1,3,4-Oxadiazole and morpholine moieties. The acetamide, 1,3,4-oxadiazole and morpholine moieties are important functionalities because of their broad range of known pharmacological activities.

Synthetic approaches (scheme-1-11) were utilized to synthesize poly-functional compounds. In first scheme, twenty three 5-substituted-1,3,4-Oxadiazol-2-thiols were synthesized by converting multifarious organic acids consecutively into the corresponding esters and hydrazides. Further the intermolecular cyclization of various carbohydrazides with carbon disulfide and potassium hydroxide yielded subsequent 5-substituted-1,3,4-Oxadiazol-2-thiols. Moreover, the reaction of different 5-substituted-1,3,4-Oxadiazol-2-thiols (scheme-2 & 3) with electrophiles, 2-bromo-*N*-[4-(4-morpholinyl)phenyl]acetamide and 2-bromo-*N*-[2-(4-morpholinyl)phenyl] acetamide yielded thirteen, *N*-[4-(4-morpholinyl)phenyl]-2-[(5-aryl/aralkyl-1,3,4-Oxadiazol-2-yl)thio]acetamides and fourteen *N*-[2-(4-morpholinyl)phenyl]-2-[(5-aryl/aralkyl-1,3,4-oxadiazol-2-yl)thio]acetamides respectively in the presence of *N,N*-dimethylformamide and sodium hydride.

Sixteen novel benzyl sulfides (scheme-4) bearing 1,3,4-oxadiazole moiety and sulfo-morpholine functionality were synthesized by the reaction of 4-(4-(bromomethyl)phenyl)sulfonyl)morpholine with different 5-substituted-1,3,4-Oxadiazole-2-thiols. Nucleophilic substitution reaction of free thiol group in 1,3,4-Oxadiazoles with 4-(2-chloroethyl)morpholine hydrochloride yielded thirteen, 4-[2-[[5-aryl/aralkyl-1,3,4-Oxadiazol-2-yl]thio]ethyl]morpholine derivatives (scheme-5) in the presence of acetone and potassium carbonate .

A series of nineteen electrophiles (scheme-5), *N*-substituted-2-bromoacetamides was developed by the reaction of different substituted/unsubstituted aryl/aralkyl/alkyl amines with 2-bromoacetyl bromide by using DCM or basic aqueous medium as solvent.

Seventy one (71) acetamides were synthesized by the reaction of 5-(2-chloro/3-chloro/4-chloro/4-nitrophenyl/phenyl)-1,3,4-Oxadiazol-2-thiols with different electrophiles by simple stirring in the presence of DMF solvent and NaH base at the room temperature.

The structures of all the synthesized compounds were characterized by using IR, ^{1}H-NMR and mass spectral data. In addition, ^{13}C-NMR technique was also used in some cases to support the structural analysis. A rational mass fragmentation pattern of some of the compounds is also proposed. Some of the ^{1}H-NMR, ^{13}C-NMR and EIMS spectra of synthesized compounds are also presented for the obvious perceptive of signals. The synthesized compounds were evaluated for antibacterial, antifungal, hemolytic and enzyme inhibition activities. Some of compounds were found to be active and showed interesting results in different studies declared above. The biological activity data in comparison of each scheme with the reference standard drugs is presented in biological activity section.