Summary

Reaction of 2-[4-(4-chlorobenzylidene)-5-oxo-4,5-dihydroxoazol-2-ylmethyl]isoindole-1,3-dione **(1)** with 4-aminoacetophenone gave the imidazole derivative**(2)** , which treatment with 4-chlorobenzaldehyde in alcoholic potassium hydroxide afforded 2-(4-(4-chlorobenzylidene)-1-(4-[4-chlorophenyl)-but-2-enoyl]phenyl]-5-oxo-4,5-dihydro-*1H*-imidazol-2-ylmethyl)isoindole-1,3-dione**(3)**. The reactivity of compound **3** towards nitrogen nucleophiles was investigated.

Thus, the reaction of compound **(3)** with hydrazine hydrate or/ semicarbazide afforded the pyrazole derivatives **(4a,b)**. Meanwhile, the reaction of **(3)** with hydroxylamine hydrochloride in refluxing pyridine gave the isoxazole derivative **(5)**.Treatment of **(3)** with urea or/ thiourea in refluxing sodium ethoxide solution gave the pyrimidine derivatives **6(a,b)**.The reaction of **(3)** with aromatic amines namely,aniline,

p-toluidine and *p*-anisidine gave the imidazole derivatives **7(a-c)** respectively. Also, the reaction of **(3)** with active methylene compounds *viz* ethyl cyanoacetate and malononitrile gave pyridine derivatives **8(a,b)**.

Moreover, treatment of **(3)** with hydrogen peroxide in presence of methanol gave 2-(4-(4-chlorobenzylidene)-1-(4-[3-chlorobenzyl)oxirane carbonyl]benzyl)-5-oxo-4,5-dihydro-*1H*-imidazol-2-ylmethyl)isoindole -1,3-dione **(9) .**

The work was extended to study the behavior of oxarine derivative **(9)** toward some nitrogen nucleophiles. Thus, reaction of **(9)** with hydrazine hydrate afforded t pyrazole derivatives **10(a,b)** ,

while treatment of **(9)** with hydroxylamine hydrochloride gave isoxazole derivative **(11)**. Furthermore, refluxing of **(9)** with thiourea in DMF gave 2-{1-{4-[4-(4-chlorobenzyl)-2-thioxoxazolidine-5-carbonyl] benzyl}-4-[2-(4-chlorophenyl)ethylidene]-5-oxo-4,5-dihydro-*1H*-imidazol-2-ylmethyl}isoindole-1,3-dione **(12)**. Treatment of **(9)** with glycine in DMF gave the morpholine derivative **(13) .**

Condensation of **(1)** with glycine yielded imidazolyglycine **(14)** which on treated with thionyl chloride followed by addition of ammonium thiocyanate afforded [4-(4-chlorobenzylidene)-2-(1,3-dioxo-1,3-dihydroisoindol-2-ylmethyl)-5-oxo-4,5-dihydroimidazol-1-yl] acetylisothiocyanate **(15)** .

Reaction of **(15)** with phenylhydrazine in dry acetone gave traizole derivative **(16)**, whereas reaction of **(15)** with o-aminophenol gave thiourea derivative **(17)**, which upon heating in acetic anhydride afforded 2-[4-(4-chlorobenzylidene)-2-(1,3-dioxo-1,3-dihydroisoindol-2-ylmethyl)-5-oxo-4,5-dihydroimidazol-1-yl]-*N*-(*3H*-indol-2-yl)]acetamide **(18)**. Also, reaction of **(15)** with anthranilic acid in dry acetone gave thiourea derivative **(19),** which was boiled in acetic anhydride gave quinazoline derivative **(20)**.

Finally, oxadiazine derivatives **(21)**, **22(a-c)** were obtained in good yields from the cyclocondensation of **(15)** with phenylisothiocyanate and Schiff bases, respectively.

Also, compound **(15)** was reacted with active methylene compounds gave **23(a,b)** and **(24)** . It was reacted with thioglycolic acid gave compound **(25)** which cyclized in acetic anhydride gave **(26)**. Compound **(14)** was reacted with hydrazine hydrate gave compound **(27**).

Synthesis of 2-(*N*-phthalimidomethyl)-4-phthalidene-5(4)-oxazolone**(28)** and its chemical character towards base catalysed or/ acid catalysed ring opening reaction was studied. It was found that **(28)** reacted with aromatic amine and amino carboxylic acid, amino derivatives gave imidazolone derivatives.

Compouned **(28)** reacted also with hydrazine hydrate gave a mixture of 1,4-phthalazindione (**32**) and cin namic acid hydrazide derivative(**33**) and with phenyl hydrazine gave mixture of *N*-anilinophthalimide (**34**)and cinnamic acid hydrazid derivative (**35**) and with hydroxyl amine hydrochloride gave **(36)** .

The reaction of **(28)** with aluminum chloride in presence of reactive aromatic substrates namely, toluence, o-xylene, m-xylene gave *N*-phthalmidoacetamidomethylarylketone **37(a-c)** were also investigated.

The structure of all the synthesized derivatives is established by: (**i**) elemental analysis, (**ii**) IR, (**iii**) NMR, (**iv**) Mass spectra.

Biological activity of the synthesized compounds have been investigated and the result are cited in test.