Synthesis and Anti-HIV Activity of Oxygen Containing Heterocyclic Compounds

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Abstract—Vast research has been undertaken to find numbers of novel chemical entities to interact with different processes of the Human Immunodeficiency Virus type 1 (HIV-1) to continue a fight against AIDS and to find efficient drug. Coumarin derivatives are well renowned for having valuable pharmacological properties and being revealed to act as HIV-1 Protease or Integrase inhibitors. Coumarin molecules targeting HIV-1 reverse transcriptase (RT) inhibit the DNA-dependent DNA-polymerase activity or the RNA-dependent DNA-polymerase activity acting as common NNRTIs.In recent years, much interest has been evidenced in substituted 4-hydroxy -2H, 5H pyrano (3, 2-C) chromene – 2, 5 - dione due to their application in the formation of Pyranochromene.

In the present work, substituted 4-hydroxy -2H, 5H pyrano (3,2-C) chromene – 2,5 – dione(I) have been prepared from 4-Hydroxy coumarin when treated with phosphorus oxychloride and zinc chloride, which was further treated with acetic acid and phosphorous oxychloride to give 3-acetyl 4-hydroxy -2H,5H pyrano (3,2-C) chromene – 2,5 – dione(II). This on heating with ethyl acetate and pulverized sodium metal for several hours afforded 4-hydroxy-3-(3-oxobutanoyl)2H,5H pyrano(3,2-c)chromene-2,5-dione (III).Finally, The product(III) was reacted with Diaminobenzophenone, Hydroxyl amine hydrochloride, O-pheneline diamine, Hydrazine hydrates, Phenyl hydrazine produce different type of coumarincompounds. The chemical structure of the different compound were confirmed by HPLC, ^{1}H-NMR, FT-IR., EI-MS and elemental analysis. Synthesized compounds upon evaluation, found to possess moderate NNRTIs activity.

Keywords—*3-Acetoacetyl pyranobenzopyran,Pyranochromene, Anti HIV Activity, HIV-1 reverse transcriptase inhibitors*

Professional Biography

Dr. Denish Karia has completed his PhD at the age of 27 years from Saurashtra University, Rajkot- Gujarat-India. He is the Head of Science faculty and Vice Principal of the institute. He has published more than 45 papers in National as well as International journals. He has published 4 Books. He is a recognized PhD guide and 8 students have completed their PhD under his guidance. He is a member of the editorial board of The Journal of Science published by Government of Gujarat, India.



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