Concluding remarks

So the research work focused on 'STUDIES ON NOVEL METHODOLOGIES FOR THE SYNTHESIS OF PRECURSOR OF BIOACTIVE COMPOUNDS'. Chapter I constitute the introduction of the thesis it deals with a brief idea about bioactive compound and some synthetic roots of its precursor. Chapter II to Chapter V reveals new protocols to synthesis different precursor of bioactive compound with their physicochemical characterization.

In Chapter II, we performed reduction of aromatic nitro to corresponding amine. We have introduced Zn metal and $CuSO_4$ salt to reduce aryl nitro to aryl amine in presence of water as a hydrogen source and the reaction occurs smoothly at room temperature. The greatest advantage of our method compared with other methods is easy handling, cost effective, environmentally benign. In Chapter III, We have developed a novel and efficient protocol through one pot reductive cyclocondensation of 2-nitroaniline with aromatic aldehydes to benzimidazole with $Zn/NaHSO_3$ in water. The fascinating part of our method in comparison to the conventional methods is its simplicity, cost effectiveness, environmentally benign approach and a less time consuming process. In Chapter IV, we have achieved a simple and convenient procedure to synthesize Pyrazine derivatives in the presence of onion extract through condensation and aromatization from the easily available 1, 2-diketones and 1, 2-diamines. The current protocol offers many advantages including a simple and effective catalytic system, simple workup, benign reagents, cheap but good to excellent yields and the reusability of the onion extract as a catalytic system. In Chapter V, we synthesized same imidazole derivatives from same starting materials with different reagents by solid as well as in liquid phase. In solid phase we used a new and recyclable silica-titanium solid supported catalyst under solvent free condition. On the other hand in solution phase we used small amount of onion extract with the help of ethanol as a solvent.

Henceforth, we were succeeded to synthesize different precursor of bioactive compound in a novel way. But the major concerns regarding their synthesis are some process are not metal free, complicated purification process, separation process, all the process are not catalytic, gram scale experiments were not done. So, some works regarding these issues are underway in our laboratory. Hope we will shorten the limitations of our process to make it best.