Introduction:

Heterocyclic chemistry is the branch of chemistry dealing with synthesis, properties and applications of heterocycles.

Compounds classified as heterocyclic probably constitute the largest and most varied family of organic compounds. After all every carboxylic compound, regardless of structure and functionality, may in principle be converted into a collection of heterocyclic analogs by replacing one or more of the ring carbon atoms with a different element, even if we restrict our consideration to oxygen, nitrogen and sulfur the permutations and combinations of such a replacement are numerous.

The word ‘drug’ is derived from the French word ‘drogue’ which means a dry herb. According to “WHO” a drug may be defined as “any substance or product which is used or intended to be used for modifying or exploring physiological system or pathological status for the benefit of recipient”.

Research programs for the discovery of new drugs and for improving the evolution criteria are under way in many laboratories. In addition knowledge of specific constituents of the mycobacterium cell and their biochemical roles has advanced considerably in the recent years.

Also, recent improvements in the knowledge of the mechanism of action of available drugs and the biochemical mechanism of resistance to them may be used as a basis for design new and better drugs to care the mycobacterial diseases.

The ultimate product of a successful drug design effort. Our goal for this is to begin to deconvolute this information in order to apply it to design of new drugs. Taking in view of the applicability of heterocyclic compounds, we have undertaken the preparation of Imidazolines derivatives nucleus. The placement of a wide variety of substituent of these nuclei has been designed in order to evaluate the synthesized products for their pharmacological profile against several strains of bacteria and fungi.

The development of a simple, efficient and general synthetic method for widely used organic compounds from readily available reagents is one of the major challenges in organic synthesis. In 1858 Debus reported the reaction between glyoxal and ammonia, a reaction that pioneered a novel synthetic route to imidazole. The imidazolones are heterocyclic compounds having diverse bioactivities including anticancer, anti-HIV agents, anticonvulsant antimicrobial etc.
The chemistry of chalcones has generated intensive scientific studies throughout the world. Especially interest has been focused on the synthesis and biodynamic activities of chalcones. In chalcones, two aromatic rings are linked by an aliphatic three carbon chain. Chalcone bears a very good synthon so that variety of novel heterocycles with good pharmaceutical profile can be designed. Chalcones are unsaturated ketone containing the reactive ketoethylenic group –CO-CH=CH-. These are coloured compounds because of the presence of the chromophore -CO-CH=CH-, which depends in the presence of other auxochromes. Different methods are available for the preparation of chalcones. The most convenient method is the Claisen-Schimdt condensation of equimolar quantities of arylmethylketone with aryl aldehyde in the presence of alcoholic alkali. Chalcones are used to synthesize several derivatives like pyrazolines isoxazoles and pyrimidines having different heterocyclic ring systems.

Chalcones are prepared by condensing aryl ketones with aromatic aldehydes in presence of suitable condensing agents. Chalcones have been reported to possess various biological activities such as cytotoxic, antibacterial, anti-tuberculosis, anti-inflammatory, antitumor, analgesic, antimitotic agents, antifungal, antiviral, and anti HIV agents. They have also been reported as, good antimicrobial agents. In the view of the varied biological and pharmacological application, we synthesized some new Heterocyclic derivatives of Chalcones.

Compounds incorporating heterocyclic ring systems continue to attract considerable interest due to the wide range of biological activities they possess. Amongst them five membered heterocyclic compounds occupy a unique place in the realm of natural and synthetic organic chemistry. Five membered heterocycles like isoxazoline have found wide application as pharmaceutical and agrochemical agents. In recent years, attention has increasingly been given to the synthesis of isoxazoline derivatives as a source of new antibiotic agents. The synthesis of novel isoxazoline derivatives remain a main focus of medicinal research. The five membered heterocyclic compounds containing nitrogen and oxygen atoms have so far been synthesized for their potentials in exhibiting some kind of activities and also for correlating it with its structure. The structural moieties such as Isoxazoles have been found to be responsible for their various physiological, biological and agricultural activities. Isoxazolines possesses a broad spectrum of biological activities such as herbicidal, antitumour and antimicrobial. They have been also reported to exhibit antiviral activity, bactericidal activity, analgesic and anti hypertensive activities. A new dimension
has got added in 1980s due to spread of HIV with high prevalence of TB infection among the patients\textsuperscript{39}.

Amongst nitrogen containing five membered heterocycles, pyrazolines have proved to be the most useful framework for biological activities. Pyrazolines have attracted attention of medicinal chemists for both with regard to heterocyclic chemistry and the pharmacological activities associated with them. In 1967, Hurobe, reviewed the chemistry of pyrazolines, which have been studied extensively for their biodynamic behaviour and industrial applications.

Pyrazolines are the reduced form of pyrazoles and are well known nitrogen containing heterocyclic compounds. Literature review reveals that pyrazoline derivatives possess of new anticonvulsant\textsuperscript{30}, antibacterial\textsuperscript{31}, antimicrobial, antitubercular, antihypertensive and antidiabetic\textsuperscript{32} agents and it is justified because more organisms being resistance to the present available drugs in the market.

World wise are pharmaceutical researches are involved to synthesize new drug molecule usually better pharmaceutical and better dynamic properties with less side effects and it is necessary to replace order drug by newer drug molecule.

From the literature surveys, it is suggested that substituted pyrazolines were well-known for biological activities. Hence, we planned to synthesis some substituted pyrazoline derivatives of biological interest.

Pyrimidines and their derivatives are considered to be important for drugs and agricultural chemicals. Pyrimidine derivatives possess several interesting biological activities such as antibacterial acivity, antimicrobial, antitumour and antifungal activities\textsuperscript{33,35}. Many Pyrimidine derivatives are used for thyroid drugs and leukemia.