Introduction

Quinazolin:-

Interestingly, a large number of quinazoline derivatives are patented and there are enough indicators to suggest that several of them are potentially useful medicinal agents. If the current trend is any pointer, there could well be a good number of derivatives in clinical trials in near future. The quinazoline compounds are classified based on the substituents present on different positions. The basic skeleton of quinazoline ring system (i) and the face of the fusion on hetero ring in quinazoline ring (ii) as cited below.

Heterocyclic chemistry comprises at least half of all organic chemistry research worldwide. In particular, heterocyclic structures form the basis of many pharmaceutical, agrochemical and veterinary products. Quinazoline are classes of fused heterocycles that are of considerable interest because of the diverse range of their biological activities such as, antimicrobial, anti-cancer, anticonvulsant, anti-tubercular, etc. Quinazolin is a heterocyclic compound consists of two fused six membered simple aromatic rings, a benzene ring and a pyrimidine ring.

According to recent data, quinazolin nucleus has attracted the attention of medicinal chemists due to its well known anticancer activity, and many substituted quinazolin derivatives have recently earned great interest in chemotherapy as antitumor drugs. Pharmacologically quinazolin particularly quinazolin-4-one (iii) or quinazolinone are among the most important classes of heterocyclic compounds. Quinazolin-4-one is synthesized when the keto group is introduced in the pyrimidine ring of quinazolin.

The chemistry of heterocycles lies at the heart of drug discovery. The chemistry and pharmacology of quinazolinone have been of great interest to medicinal chemistry. In
recent years there has been an increasing interest in the chemistry of 4(3H)-quinazolinones because of their biological significance[1,2] Many of them show antibacterial[3,4], antifungal[5], anti-inflammatory[6], analgesic and anti-inflammatory [7], antitubercular[8].

**Schiff base:-**

Schiff’s base compounds and their complexes have significant importance in chemistry. Every year number of reports is published on preparation of these compounds and their application in chemical reactions. The usage of most of the antimicrobial agents is limited, not only by the rapidly developing drug resistance, but also by the unsatisfactory status of present treatments of bacterial and fungal infections and drug side effects. This has spurred the scientists to develop the new antibacterial agents having broad antimicrobial spectrum.

The Schiff bases can be prepared by the acid catalysed reaction of amine and ketone or aldehyde. Schiff bases are used as starting material for the synthesis of various bioactive heterocyclic compounds. The Schiff bases used as a protective agent in natural rubber and amino protective groups inorganic synthesis. Dabholkar and More have synthesized schiff bases under microwave irradiation. The Schiff bases have been synthesized by condensing carbonyl compound and amine in water suspension medium. Arshi Naquvi et.al reported the synthesis of Schiff bases by environmentally benign synthetic methods. Khadsan et.al, synthesized a Schiff bases via eco-friendly and energy efficient greener methodologies [9].Recently Schiff bases have been synthesized by condensing carbonyl compounds and amines in water suspension medium. These wide application and diverse potential biological activities of Schiff bases prompted us to synthesize new Schiff bases containing heterocyclic moiety and to as certain their microbial activity.

**Azetidinone:-**

The four membered Azetidin-2-ones are the carbonyl derivatives of azetidines containing carbonyl group at the position-2. These are also known as 2-azetidinones or more commonly known as β-lactams. Azetidinone or β-lactam chemistry is of great importance because of the use of β-lactam derivatives as antibacterial agents.

The discovery of penicillin structure that contains β-lactam system led extensive investigations to obtain β-lactam antibiotics with a wider spectrum of activities and greater resistance to enzymatic cleavage. β-lactam antibiotics contain two basic structural units; penam and cephem (both contain β-lactam unit), and include two powerful antibiotics; penicillin and cephalosporin.
**Thiazolidinone:**

Thiazolidinones are derivatives of thiazolidine and are an important group of heterocyclic compounds. There are three types of thiazolidinones in which carbonyl group is attached at any one of the 2, 4, and 5 position. Among these three types of thiazolidinones the most important thiazolidinones is (iv), which contains carbonyl group at 4th position. It is known as 4-oxo-thiazolidine or 4-thiazolidinone

![Chemical structure](iv)

Thiazolidinones have been synthesized and evaluated for their convulsant activity[10]. 2-Imino-3-(4-arylthiazol-2-yl)-thiazolidin-4-ones and Their 5-Arylidene Derivatives have a anti fungicidal Activity[11], 3-(4’-bromo-2’-carboxyphenyl)-2-(2’-fluoro phenyl) -5- methyl-4- thiazolidinone have a anti-inflammatory[12]. 2-(substituted phenyl)-3-[(N:N di methyl amino) propyl] 1,3-thiazolidine-4-one have anti histaminic activity[13], 4-thiazolidinones of benzal-4-bromoanilines derivatives have fungitoxic activity[14], 4-thiazolidinones have anti tubercular agent[15]

**Diazo:**

Most of the heterocyclic dyes are marketed in the form of azo disperse, azo-vat, azo-acid dyes etc. All these have part of phenols and naphthols having hydroxyl group as auxochrome group. The formation of dyes based on this heterocyclic compounds may yield with good hue properties. Hence, in continuation of earlier work it was thought interesting to explore the field of azo dyes based on 2-Butyl-3-(4-hydroxybenzoyl)benzofuran. Reactive dyes are extensive used for dyeing process in textile and about 20-40% of these dyes are lost in the effluent. They exhibit a wide variability in chemical structure, primarily based substituted aromatic and heterocyclic groups. Since reactive dyes are highly soluble in water. Their removal from waste water is difficult by conventional coagulation and the activated sludge process.

Dyes released from the textile processing and dye stuff manufacturing industries results in increase in organic load of natural reservoirs. Generally, various dyes found in industrial effluents, ultimately, enter the aquatic ecosystem and can create various environmental hazards. The dyes are toxic and carcinogenic in nature and environmental contamination by these toxic chemicals is emerging as a serious global problem. Coloured solution containing dyes from industrial effluents of textile, dyeing and printing industries may cause skin cancer due to photosensitization and photodynamic damage.