2-LITREATURE REVIEW

2.1 - Quinazoline as Antibacterial Agent

★ J. A. Patel et.al\textsuperscript{96} has reported that 2–alkyl–6–bromo–3, 1–benzoxazine–4–one (2) is synthesized by treating p–Bromoanthranilic acid and Acetylenechloride or Benzoylchloride. Reaction of 2–alkyl–6–bromo–3, 1–benzoxazine–4–one (2) with hydrazinehydrate furnish the corresponding 3–Amino–2–methyl–6–bromoquinazoline–4(3H)–one (3) which on reaction with benzaldehyde afford N,N – arylidene derivative (4). Reaction of 4 with various diazonium salts yields 6–bromo–2–alkyl/aryl– 3{[phenyl (phenyldiazenyl) methylene] amino} quinazoline–4(3H)–one.

★ Deepti Kohli et.al \textsuperscript{97} has reported that in the present work the desired quinazolinone derivatives (DK-1, DK-2, DK-3, DK-4, DK-5, DK-6 & DK-7) were synthesized by treating 2-Chloro-N-(4-oxo-2-phenylquinazolin-3(4H)-yl)acetamide (I-1) with the different substituted phenols in presence of anhydrous potassium carbonate & catalytic amount of potassium iodide in dry acetone. The structures of the newly synthesized compounds have been established on the basis of their m.p., TLC, IR and 1HNMR data. All the newly synthesized quinazolinone derivatives were evaluated for their antibacterial activity by cup plate method by measuring inhibition zone. Ampicillin was used as standard drug. The compound DK-2 showed more potent antibacterial activity than the standard drug ampicillin.
Sona Jantová et.al\textsuperscript{98} was found that The antibacterial activity of ten series of substituted quinazolines (157 derivatives) against bacterial strains Escherichia coli CCM 3988, Pseudomonas aeruginosa CCM 3955, Bacillus subtilis ATCC 6663 and Staphylococcus aureus CCM 3953 by microdilution assay was investigated. The sensitivity of the Gram positive bacteria to the tested quinazolines was higher than that of Gram negative bacteria. The most effective of ten quinazoline structure series were condensed [1,2,4]triazoloquinazolines and 10H-[1,2,4]triazino[5,4-b]quinazolin-10-ones. Study of structure-activity relationship showed that the most effective derivatives were those carrying an unsubstituted benzene ring or one substituted with small substituents (Cl and CH\textsubscript{3}) while having pyrimidine ring substituted with larger substituents, such as morpholine, phenyl or secondary amines. The most effective derivative 1-[(3-methylphenyl)amino]-10H-[1,2,4]triazino[5,4-b]quinazolin-10-one had MIC values 5 mg/L for E. coli; 100 mg/L for P. aeruginosa, 10 mg/L for S. aureus and 1 mg/L for B.subtilis. 9-chloro-morpholin-4-yl[1,2,4]triazolo[4,3-c]quinazolin-3(4H)-thione demonstrated MIC value lower than ampicillin for B. subtilis and the same MIC value as ampicillin for E. coli.

Ashis Kumar et.al\textsuperscript{99} was reported that Synthesis of ten 3-(arylideneamino)-2-phenylquinazoline-4(3H)-ones is reported. All the compounds contained a common phenyl group at the 2-position, while the substituents on the aryldeneamino group were varied. The compounds were investigated for their antimicrobial activity against both Gram-positive (Staphylococcus aureus 6571 and Bacillus subtilis) and Gram-negative bacteria (Escherichia coli K12 and Shigella dysenteriae 6) using a turbidometric assay method. It was found that the
incorporation of the 3-arylideneamino substituent enhanced the anti-bacterial activity of the quinazolone system. The preliminary QSAR studies were done using some computer derived property descriptors, calculated values of partition coefficients as well as usual Hammett’s sigma constants and the substituent’s molar refractivity.

★ Theivendren Panneer Selvam et.al\textsuperscript{100} has reported that several novel 6, 7, 8, 9-tetrahydro-5H-5-phenyl-2-benzylidine-3-substituted hydrazine thiazolo (2, 3-b) quinazoline derivatives were synthesized and evaluated for their anthelmintic activity in a passive avoidance test. Chemical structures of all of the newly synthesized compounds were confirmed by infrared spectroscopy, 1H-nuclear magnetic resonance, mass spectroscopy, and elemental analyses. Out of 15 compounds, only 6e and 6o had good anthelmintic activity. Experimental data led to the conclusion that the synthesized compounds have anthelmintic activity.

★ Aly\textsuperscript{101} has reported that A highly efficient and versatile synthetic approach to the synthesis of annelated quinazoline derivatives viz 1,2,4-triazino[4,3-c]quinazoline 5-7, 11, thiazolidinylquinazoline 9, quinazolino[4,3-b]quinazolin- 8-one 12 and imidazoquinazolines 14a,b,15 is presented. Also, a variety of pyrazolylquinazolines, 19-21 and pyrimidinylquinazolines 22a, b were obtained via a sequence of heterocyclization reactions of 4-methyl-N-[4-(4-oxo-3, 4-dihydroquinazolin-2-yl) phenyl] benzene-sulfonamide (2) with different reagents. The new compounds were synthesized with the objective of studying their antimicrobial activity.
Amar R. Desai et.al\textsuperscript{102} was found that the Niementowski reaction has been extended to synthesize 3-substituted/2, 3-disubstituted- 4(3H) quinazolinones instead of the 2-substituted derivatives. The methodology is environmentally benign and completely eliminates the need of solvent for the reaction. Neat reactants were cyclocondensed under microwaves to afford, in good yield, the desired product in less irradiation time as compared to the classical technique. The compared results of microwave and conventional techniques have been discussed. 3-Methyl-1H-pyrazolones were synthesized from substituted hydrazides using various solid supports under microwave irradiation (MWI). The results obtained highlight the versatility of the solid supports. All synthesized compounds were screened for their antibacterial activity against gram positive and gram negative bacteria and showed good to significant activity, as well as demonstrated significant antifungal activity against Candida albicans ATCC 10231 and C. krusei GO3.

Manish Sharma et.al\textsuperscript{103} has reported that In the present work the desired quinazolinone derivatives (DK-1, DK-2, DK-3, DK-4, DK-5, DK-6 & DK-7) were synthesized by treating 2-Chloro-N-(4-oxo-2-phenylquinazolin-3(4H)-yl)acetamide (I-1) with the different substituted phenols in presence of anhydrous potassium carbonate & catalytic amount of potassium iodide in dry acetone. The structures of the newly synthesized compounds have been established on the basis of their m.p., TLC, IR and 1HNMR data. All the newly synthesized quinazolinone derivatives were evaluated for their antibacterial activity by cup plate method by measuring inhibition zone. Ampicillin was used as standard drug. The compound DK-2 showed more potent antibacterial activity than the standard drug ampicillin.
A.U. Kale et al. was found that in the present investigation an attempt has been made for the synthesis of 2-substituted 1, 3-benzoxazine-4-ones, using N-substituted anthranilic acid and acetic anhydride. Further these 2-substituted 1, 3-benzoxazine-4-ones has been condensed with various aliphatic and aromatic amines in equimolar concentration to give corresponding some new 2, 3-disubstituted quinazolin-4-(3H)-ones. The structure of these compounds has been established on the basis of their elemental, analytical, and spectral data. These compounds were tested for *in vitro* antibacterial activity against *Escherichia coli*, *Staphylococcus aureus* and antifungal activity against *Aspergillus niger*, *Candida albicans* by standard methods. These synthesized compounds have been shown moderate to good antibacterial as well as antifungal activity when compared with standard.

Aly et al. has found that a highly efficient and versatile synthetic approach to the synthesis of annelated quinazoline derivatives viz. 3,4,9,10a-tetraazaphenanthrenes, thiazolidinylquinazoline, 2,4,9,10a-tetraazaphenanthrene, quinazolino[4,3-b]quinazolin-8-one and imidazoquinazolines 14a,b, 15. Also, a variety of pyrazolylquinazolines, pyrimidinylquinazolines were obtained via a sequence of heterocyclization reactions of 4-methyl-4-(4-oxo-3, 4-dihydroquinazolin-2-yl) phenyl]benzenesulfonamide (2) with different reagents. The new compounds were synthesized with the objective of study their antimicrobial activity.
★ S.M. Mosaad et.al\textsuperscript{106} has reported that A series of 2-(4-chlorophenyl)-6-iodoquinazoline carrying different acyclic or heterocyclic moieties were prepared and tested for their activity against certain strains of Gram negative bacteria, Gram positive bacteria and pathogenic Fungi. The results revealed that some of synthesized compounds displayed marked activity against some of the tested microorganisms.

★ Sona Jantova et.al\textsuperscript{107} has reported that The antibacterial activity of ten series of substituted quinazolines (157 derivatives) against bacterial strains Escherichia coli CCM 3988, Pseudomonas aeruginosa CCM 3955, Bacillus subtilis ATCC 6663 and Staphylococcus aureus CCM 3953 by microdilution assay was investigated. The sensitivity of the Gram positive bacteria to the tested quinazolines was higher than that of Gram negative bacteria. The most effective of ten quinazoline structure series were condensed [1,2,4]triazoloquinazolines and 10H-[1,2,4]triazino[5,4-b]quinazolin-10-ones. Study of structure-activity relationship showed that the most effective derivatives were those carrying a unsubstituted benzene ring or one substituted with small substituents (Cl and CH3) while having pyrimidine ring substituted with larger substituents, such as morpholine, phenyl or secondary amines. The most effective derivative 1-[(3-methylphenyl)amino]-10H-[1,2,4]triazino[5,4-b]quinazolin-10-one had MIC values 5 mg/L for E. coli100 mg/L for P. aeruginosa, 10 mg/L for S. aureus and 1 mg/L for B. subtilis. 9-chloro-morpholin-4-yl [1,2,4]triazolo[4,3-c]quinazolin-3(4H)-thione demonstrated MIC value lower than ampicillin for B. subtilis and the same MIC value as ampicillin for E. coli.
★ **Adel S. El-Azab et al.**\textsuperscript{108} has reported that Two new series of 6-iodo-2, 4-dithio-4(3\textit{H}) quinazoline and 6-iodo-2-thio-4-oxo-quinazoline were prepared and screened for their antimicrobial activity. Compounds, showed marked broad spectrum antimicrobial activity against a panel of Gram-positive and Gram-negative bacteria and pathogenic fungi. It seems that the connected heterocyclic rings such as benzimidazole and pyridazine, has improved the antimicrobial activities. The detailed synthesis and the antimicrobial screening of the new compounds are reported.

★ **Theivendren Panneer Selvam et al.**\textsuperscript{109} reported that Quinazoline ring is an aromatic benzopyrimidine system; many of its derivatives possess interesting biological activities, such as analgesic, anti-inflammatory, anti-microbial, and anti-tumor. In our study, the biological activity of synthesized novel 5-(2’-hydroxy phenyl) - 6,7,8,9 tetra hydro-5\textit{H}-(1, 3) thiazolo-2-(4.-substituted benzylidine) (2, 3-b) quinazolin-3-phenyl hydrazone were characterized by antimicrobial screening against several gram-positive, gram negative bacteria, and fungus. The purity of the synthesized compounds was characterized by means of IR, 1HNMR, mass spectral and elemental analysis. Antimicrobial screening for all the compounds exhibits characteristic microbial inhibition against Bacillus lentus, Micrococcus luteus, Bacillus cereus, Staphylococcus albus, Escherichia coli, Klebsiella aerogenes, Salmonella paratyphi, Proteus vulgaris and Candida albicans.
★ M. A. Khali et.al\textsuperscript{110} was reported that three novel series of 4-oxoquinazoline derivatives were prepared and evaluated as potential antimicrobial agents. Evaluation of the antimicrobial activity of a variety of 4-substituted-1-thiosemicarbazides, 3, 4-disubstituted thiazolines, and 3-substituted-5-thiazolidones reveals that the majority possess significant \textit{in vitro} activity against Gram-positive organisms. Some derivatives also exhibited antifungal activity.

★ Govindaraj Saravanan et.al\textsuperscript{111} has reported in the present study, novel Schiff bases were synthesized by condensation of 3-amino-2-methyl quinazolin-4-(3H)-ones with different aromatic aldehydes. The 3-amino-2-methyl quinazolin-4-(3H)-one was synthesized from anthranilic acid via the 2-methyl benzoxazin-4-one. The chemical structures of the synthesized compounds were confirmed by means of Infrared (IR), \textsuperscript{1}H-NMR, \textsuperscript{13}C-NMR, Mass spectral, and Elemental analysis. These compounds were screened for anti-bacterial (\textit{Staphylococcus aureus} ATCC 9144, \textit{Staphylococcus epidermidis} ATCC 155, \textit{Micrococcus luteus} ATCC 4698, \textit{Bacillus cereus} ATCC 11778, \textit{Escherichia coli} ATCC 25922, \textit{Pseudomonas aeruginosa} ATCC 2853, and \textit{Klebsiella pneumoniae} ATCC 11298)) and anti-fungal (\textit{Aspergillus niger} ATCC 9029 and \textit{Aspergillus fumigatus} ATCC 46645) activities, using the paper disk diffusion technique. Most of the synthesized compounds exhibited significant anti-bacterial and anti-fungal activities. Among the synthesized compounds, 3-(4-hydroxy benzylideneamino)-2-methyl quinazolin-4(3H)-one 4g and 4c was found to exhibit the highest anti-bacterial activity and 3-(4-hydroxy-3-methoxy benzylideneamino)-2-methyl quinazolin-4(3H)-one 4k exhibited the highest anti-fungal activity.
2.2 - Quinazolinone as Anticancer, Antiviral Agent and Anti Oxidant

★ Salawa F. Mohamed et.al\textsuperscript{112} Synthesized a series of diazacyclopenta(b)phenanthrene, Diazabenzo(a)anthracene and dihydrobenzo(h)quinazoline derivative using 2-thiophen-2-ylmethylene-3,4-dihydro-2H-naphthalene-1-one as a starting material. The biological screening showed many of them have good anticancer and antiviral activities.

★ K. Manasa et.al\textsuperscript{113} has reported that Sodium hydroxide on treatment with bromine and pthalamide followed by reaction with hydrochloric acid gave anthranillic acid 1. Compound 1 on further reaction with sodium hydroxide and benzoyl chloride yields 2-phenyl benzoxizanone; Compound further reactions with substituted anilines yielded the corresponding too respectively. All the synthesized compounds have been screened for their antioxidant and anticancer activity.

★ Periyasamy Selvam et.al\textsuperscript{114} The 2-phenyl-benzoxazin-4-ones were condensed with primary amine to form the 2, 3-disubstituted quinazolin-4(3H)-ones. Their chemical structure was elucidated by means of spectral (FT-IR, 1H-NMR, MS) and elemental analysis. The antiviral activity and cytotoxicity of the compounds were tested in HeLa cells (vesicular stomatitis virus, Coxsackie virus B4 and respiratory syncytial virus), HEL cells [herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2), vaccinia virus], Vero cells (parainfluenza-3, reovirus-1, Sindbis virus, Coxsackie virus B4 and Punta Toro virus). Among the new derivatives evaluated, specific antiviral activity was noted with compound QAA against vaccinia virus, parainfluenza-3 virus and Punta Toro virus, compound QOPD
against HSV-1, HSV-2 and vaccinia virus, and compounds QONA and PD-NFIN against Coxsackie virus B4.

★ Enayat Ibrahim Aly et.al 115 reported that four new 4-anilino-7-chloroquinoline derivatives substituted at position 4 of the anilino moiety with various bioisosteric heterocycles have been designed and synthesized. Virtual screening was carried through docking the designed compounds into the ATP binding site of the epidermal growth factor receptor (EGFR) to predict if these compounds have similar binding mode to the EGFR inhibitors. The newly synthesized compounds were also tested in vitro on human breast carcinoma cell line (MCF-7) in which EGFR is highly expressed. Most of the tested compounds exploited potent cytotoxic activity with IC50 values in the nanomolar range in particular compounds II, IVd, Va, Vc, VIa and VII which displayed the highest activity among the tested compounds with IC50 equal to 5.70, 5.37, 0.87, 5.10, 1.41 and 2.75 nM respectively.

★ Periyasamy Selvam et.al116 reported the 2-phenyl-benzoxazin-4-ones were condensed with primary amine to form the 2, 3-disubstituted quinazolin-4(3H)-ones. All compounds exhibited some activity against herpes simplex virus type 1 (IC50's = 20 – 30 μM). Certain compounds had modest activity (IC50 = 20-60 μM) against vaccinia and/or cowpox virus, similar to cidofovir. Weak to no activity was observed against human cytomegalovirus. With one exception little cytotoxicity was observed at concentration up to 100 μM thereby suggesting the possibility of a virus-specific mechanism of action.
Kumar KS et al\textsuperscript{117} has reported that a new series of 3-(benzylideneamino)-2-phenylquinazoline-4(3H)-ones were prepared through Schiff base formation of 3-amino-2-phenyl quinazoline-4(3) H-one with various substituted carbonyl compounds. Cytotoxicity and antiviral activity were evaluated against herpes simplex virus-1 (KOS), herpes simplex virus-2 (G), vaccinia virus, vesicular stomatitis virus, herpes simplex virus-1 TK- KOS ACVr, para influenza-3 virus, reovirus-1, Sindbis virus, Coxsackie virus B4, Punta Toro virus, feline corona virus (FIPV), feline herpes virus, respiratory syncytial virus, influenza A H1N1 subtype, influenza A H3N2 subtype, and influenza B virus. Compound 2a showed better antiviral activity against the entire tested virus.

2.3- Quinazoline as Anti Inflammatory and Analgesic Agent\textsuperscript{118-119}

Omar abd el-fattah m et al\textsuperscript{118} has reported that in this work, it was of interest to synthesize new series of some 2-[(E)-2-furan-2-yl-vinyl]-quinazolin- 4(3H)-ones incorporated into pyrazoline, isoxazoline, pyrimidine or pyrimidine-thione ring systems at position-3 of the quinazoline ring. The antimicrobial activity and antiinflammatory effect of some of these compounds were studied.

Manish Srivastav et al\textsuperscript{119}, reported that a series of novel 3-(6-substituted-1, 3-benzothiazole-2-yl)-2-[[4- (substituted phenyl) amino] methyl] quinazolines-4(3H)-ones were synthesized by treating 2-(chloromethyl)-3-(6-substituted-1, 3-benzothiazole-2-yl) quinazoline-4-(3H)-one (IIa-d) with various substituted amine. The compounds (IIa-d) prepared by treating 2-[(chloroacetyl) amino] benzoic acid with different 2-amino-6-substituted benzothiazole. Elemental analysis, IR, 1HNMR and mass spectral data confirmed the structure of the newly
synthesized compounds. Synthesized quinazolines-4-one derivative were investigated for their anti-inflammatory and antibacterial activity.

2.4 - Quinazoline as Anti Fungal Agent \textsuperscript{120-123}

★ \textbf{R.T. Vashi et.al}\textsuperscript{120} reported that the present investigation involved the synthesis of novel ligand HL14 and its chelate complexes with Cu (II), Ni (II), Co (II), Mn (II) and Zn (II). The characterization studies of chelates were conducted using various physicochemical methods such as elemental analysis, conductometric studies, magnetic susceptibility, FT-IR, NMR and electronic spectral data. The stoichiometry of the complex has been carried out and found to be 1: 2 (Metal: ligand). An octahedral geometry around Co (II), Ni (II) and Mn (II), distorted octahedral geometry around Cu (II) and tetrahedral geometry around Zn (II) have been proposed. The antifungal activity of ligand and its metal chelates was performed against various fungi.

★ \textbf{R. T. Vashi et.al}\textsuperscript{121} has reported that Novel ligands containing quinazoline-4-one-8-hydroxyquinoline (QQ) merged moieties were prepared and characterized. For this anthranilic acid and 5- bromoanthranilic acid were converted respectively into 2-chloromethyl–3-(4-methyl phenyl)-3(\textit{H})-quinazoline-4-one and 2-chloromethyl–3-(methyl phenyl)-6-bromo- 3(\textit{H})-quinazoline-4-one. Both these compounds were condensed with 5-amino-8-hydroxyquinoline. The so called resulted compounds were named respectively as 2-[(8-hydroxy-quinolinyl) –5-amino methyl] -3-(4-methylphenyl)- 3(\textit{H})- quinazoline -4- one and 2-[(8-hydroxyquinolinyl)-5-aminomethyl] -3(methyl phenyl)-6-bromo-3(\textit{H})-
quinazoline-4-one. Both the compounds were designated respectively as HL1 and HL2 ligands. The transition metal (Cu$^{2+}$, Ni$^{2+}$, Zn$^{2+}$, Mn$^{2+}$ and Co$^{2+}$) complexes of both these ligands were prepared. The ligands and their complexes as case may be were characterized by elemental analysis, spectral studies and number of hydroxyl groups. The stoichiometry of the complexes has been found to be 1:2 (metal: ligand). An octahedral geometry around Co$^{2+}$, Ni$^{2+}$ and Mn$^{2+}$, distorted octahedral geometry around Cu$^{2+}$ and tetrahedral geometry of around Zn$^{2+}$ have been proposed. These complexes also been tested for their antifungal activities.

★ Guiping Ouyang et.al$^{122}$ has reported that a simple, efficient, and general method has been developed for the synthesis of various 3-alkylquinazolin-4-one derivatives from quinazolin-4-one treated with alkyl bromides under phase transfer catalysis condition. The structures of the compounds were characterized by elemental analysis, IR, $^1$H-NMR and $^{13}$C-NMR spectra. Title compound 6-bromo-3-propylquinazolin-4-one (3h) was found to possess good antifungal activity.

★ Mariappan et.al$^{123}$ was reported that a new series of Quinazolone Schiff bases were synthesized. The structures of the synthesized compounds were confirmed on the basis of IR, 1HNMR. The synthesized compounds (X1 to X6) were screened for anti-inflammatory activity. Among the entire test compounds, X2 have shown promising activity as compared to the rest. All the experimental results were statistically significant.
2.5 Quinazoline as Antiulcer

★ Avinash Patil et al., has reported that 2-[5-substituted-1-H-benzo(d)imidazol-2-yl sulfinyl]methyl-3-substituted quinazoline-4-(3H)-one derivatives were synthesized and tested for antiulcer activity against pylorus ligation-induced, aspirin induced and ethanol induced ulcer in rat model. All the synthesized compounds were characterized by using IR, MS and 1H NMR spectral and elemental analysis. The compounds were screened for their antiulcer activity: compounds 5k and 5n showed higher activity than omeprazole used as standard.

2.6 Quinazoline as Anticonvulsant

★ Abdel Ghany Aly El-Helby was reported that a new series of 3-substituted (methyl, ethyl or phenyl) -3H-quinazolin-4-one derivatives (4a-l) were synthesized through condensation reaction of their potassium salts (3a-l) with methyl, ethyl and phenylisocyanate. The newly synthesized derivatives (4a-l) were evaluated for anticonvulsant activity. It was found that these compounds showed the highest anticonvulsant activity at low doses (50–100 mg kg⁻¹), whereas at doses over 100 mg kg⁻¹ they showed a stimulant effect on the central nervous system that even potentiated the effect of the convulsive agent, pentylenetetrazole, in mice. A series of halogenated derivatives, 3-methyl, 3-ethyl and 3-phenyl-6-mono and 6, 8-disubstituted-3H-quinazolin-4-one derivatives (4m-z) were also synthesized and evaluated for anticonvulsant activity. Reduced anticonvulsant activity was recorded. Phenobarbitone sodium was used as a reference drug.
Ponilavasara Ilangoval et al.\textsuperscript{126} was found that the present work was carried out to synthesize a series of substituted quinazolinone semicarbazones at third position of the quinazoline nucleus and chemically modifying second position of quinazolinone to get the compounds with lesser side effects and more potent anticonvulsive agents. Although several new anticonvulsants are already in clinical use, some types of seizures are still not adequately treated with current therapy and have limitations, intolerable side effects. In response to these limitations, the development of new drugs to optimally manage seizures has been strongly advocated. Thus the search for new anticonvulsant drugs continues to be an active area of investigation in medicinal chemistry. The present study describes the synthesis of newer quinazolinone derivatives and their anticonvulsant activities. The newly synthesized compounds were evaluated intraperitoneally into the mice in the maximal electro shock (MES), subcutaneous strychnine threshold test (scSTY), using doses 30, 100, 300 mg/kg, and neurotoxicity screens, observation was carried out at two different time intervals. Almost all the synthesized analogues were equipotent to phenytoin with very low neurotoxicity profile.

2.7 Quinazoline as Anthelmintic \textsuperscript{127}

Theivendren P. Selvam et al.\textsuperscript{127} has found that the several novel 6, 7, 8, 9-tetrahydro-5\textit{H}-5-phenyl-2-benzylidine-3-substituted hydrazine thiazolo (2, 3-\textit{b}) quinazoline derivatives were synthesized and evaluated for their anthelmintic activity in a passive avoidance test. Chemical structures of all of the newly synthesized compounds were confirmed by infrared spectroscopy, 1H-nuclear magnetic resonance, mass spectroscopy, and elemental analyses. Out of 15
compounds, only 6e and 6o had good anthelmintic activity. Experimental data led to the conclusion that the synthesized compounds have anthelmintic activity.

**2.8 Quinazoline as Anti-Nociceptive Agent**¹²⁸⁻¹²⁹

★ **Junhui You, Changwen Ye et.al**¹²⁸ has reported that a series of 4-(2-methoxyphenyl)-2-oxo-butyryl-quinazolinones were designed and synthesized based on the structure of febrifugine. The structures of the new compounds were confirmed by ¹H NMR, ¹³C NMR, IR spectra and HRMS. The biological activity test results indicated that they exhibited anticoxidial activities against *Eimeria tenella* in the chicken diet with a dose of 9 mg/kg. Compared with halofuginone, these compounds have the advantages of shorter synthetic routes and lower cost.

★ **T.Panneer Selvam et.al**¹²⁹ was found that a series of 6,7,8,9 tetrahydro-5H-5-(2'-hydroxy phenyl)-2-(4'-some substituted benzylidine) thiazolo (2,3-b) quinazolin-3(2H)-one (4a-4d) and 6,7,8,9 tetrahydro-5H-5-(2'-hydroxy phenyl)-2-(4'-some substituted benzylidine)-3-(4-nitrophenyl amino) thiazolo quinazoline (5a-5d) have been synthesized. All the newly synthesized compounds chemical structure were confirmed by IR, ¹H-NMR, mass spectroscopy and elemental analysis. The new compounds have been tested for their antinociceptive, anti-inflammatory activities. The results of studies indicate that the hydroxy substitution in the benzylidine ring increased the anti-inflammatory and antinociceptive activities.
**Quinazoline as Sedative and Hypnotic Agent**

T. Panneer Selvam et al. was found that a series of novel 5-(2’-hydroxy phenyl)-6,7,8,9 tetra hydro-5H(1,3)thiazolo-2-(4’- substituted benzylidine) thiazolo (2,3-b) quinazolin-3-phenyl hydrazone were been synthesized. Among the designed compounds most of them showed a significant CNS depressant activity and sedative hypnotic activity via actophotometer screen.

**2.9. Quinazoline as Anti – Tuberculosis Agent**

Omar Al-Deeb et al. was reported that a series of 21 new 2-alkylthio-6-iodo-3-substituted-quinazolin-4-one derivatives was prepared and screened for their *in vitro* antitubercular activity against *Mycobacterium tuberculosis* strain H Rv, using the radiometric BACTEC 460-TB methodology. Active compounds were also screened by serial dilution to assess toxicity to a VERO cell line. The results indicate that compounds 5, 14 and 16 showed 96%, 97% and 94% GI, respectively, at a concentration of 6.25. The IC for these 3 compounds, respectively, was found to be 8.522, 50 2.589 and 23.167. Unfortunately, the overall results indicate that they were weakly active with a low selectivity index as indicated by their cytotoxic effects.

Ji Kune et al. was reported that 4-Quinazolinol was prepared by the reaction of anthranilic acid and formamide. The hydroxyl group was converted into the thiol function by treatment with phosphorus (V) sulfide, and the subsequent alkylation of the thiol group was carried out with alkyl halides under the conditions of phase-
transfer catalysis. The structure of the substances was confirmed by $^1$H, $^{13}$C NMR, IR, and MS. Most of the synthesized compounds exhibited antimycobacterial activity against the strains of *Mycobacterium tuberculosis*, *Mycobacterium avium*, *Mycobacterium fortuitum*, *Mycobacterium kansasii* and *Mycobacterium intracellulare*. 4-((S-Butylthio) quinazoline (3c) was even more active than isoniazide against atypical strains of mycobacteria.

★ **Pattan et.al**$^{133}$ has reported that A new series of N-3[4-(4-chlorophenyl thiazole-2-yl)-2-amino methyl] quinazoline-4(3H)-one and their derivatives are synthesized. The structures of the title compounds are confirmed on the basis of IR and $^1$H NMR. The compounds are screened for their antitubercular activity, using H$_{37}$Rv strain on L J medium. All the compounds have showed moderate to promising antitubercular activity.

★ **Rama P. Tripathi et.al**$^{134}$ was reported that Tuberculosis (TB) caused by *Mycobacterium tuberculosis* remains a leading cause of mortality worldwide into 21st century. The mortality and spread of this disease has further been aggravated because of synergy of this disease with HIV. A number of anti-TB drugs are ineffective against this disease because of development of resistance strains. Internationally efforts are being made to develop new anti-tubercular agents. A number of drug targets from cell wall biosynthesis, nucleic acid biosynthesis, and many other biosynthetic pathways are being unravelled throughout the world and are being utilized for drug development. In this review, socioeconomic problems in developing countries, efforts to control this disease in different individuals, the targets (known already and newly discovered), and existing anti-tubercular agents
including natural products and lead molecules, and the future prospects to develop new anti-TB agents are described.

★ Kunes J et.al\textsuperscript{135} was found that 4-Quinazolinol was prepared by the reaction of anthranilic acid and formamide. The hydroxy group was converted into the thiol function by treatment with phosphorus (V) sulfide, and the subsequent alkylation of the thiol group was carried out with alkylhalides under the conditions of phase-transfer catalysis. The structure of the substances was confirmed by 1H, 13C NMR, IR, and MS. Most of the synthesized compounds exhibited antimycobacterial activity against the strains of Mycobacterium tuberculosis, Mycobacterium avium, Mycobacterium fortuitum, Mycobacterium kansasii and Mycobacterium intracellulare. 4-(S-Butylthio) quinazoline (3c) was even more active than isoniazide against atypical strains of mycobacteria.

★ S.M.Mosaad et.al\textsuperscript{136} reported that in the present study 2-(4-chlorophenyl)-6-iodo-3, 4- dihydroquinazoline-4-one 3 was prepared by hot reaction of 2-(4-chlorophenyl)-6-iodo-4H-3,1-benzoxazin-4-one 2 with formamide. Treatment of 3 with phosphorous penta sulfde yielded the thione derivative 4. Alkylation of 3 and 4 with certain alkyl halides gave the target compounds. The structures of the compounds were confirmed by FT-IR, 1H-NMR, MS.

★ Rajasekaran S et.al\textsuperscript{137} In recent years there is a tremendous increase of drug resistant pathogens, especially mycobacterium tuberculosis leading to the design and development of newer antimycobacterial compounds. The reaction of 2-phenyl-3-chloroacetamido quinazolin-4(3H)-ones with various aromatic amines and thiols gave
N-(4-oxo-2-phenylquinazolin-4(3H)-yl)-2-[substituted heteroaryl] acetamide derivatives. The structure of the compounds has been confirmed by IR, 1HNMR, Mass spectral data and Elemental analysis. Antitubercular and antibacterial activities were performed by microbroth dilution and cup-plate method respectively. The compounds have also been screened for antioxidant activity by DPPH method. All the synthesized compounds have been subjected for physical parameter evaluation. Though the compounds showed moderate antioxidant activity, few compounds have shown good antitubercular activity and better antibacterial activity compared to the standard drug.