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Quinazolin-4-one: A highly important hetrocycle with diverse biological activities: A review

Saurav kumar[1*], Garima Mishra[1], Pradeep Singh[1], K. K. Jha[1], R. L. Khosa[2], Sushil k. Gupta[3]

[1]Department of Pharmacognosy, Teerthanker Mahaveer College of Pharmacy, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India
[2]Deptt. of Pharmacy, Bharat Institute of Technology, Meerut
[3]Deptt. of Pharmaceutical Chemistry, School of Pharmacy, IFTM University, Moradabad

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ABSTRACT

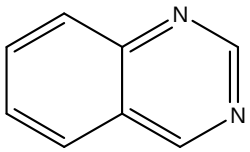
Quinazolin-4-one and their derivatives have been studied extensively for various biological activities such as anti-inflammatory, antimicrobial, anticancer, anticonvulsant and anti-HIV activity etc. The purpose of this review was to collate literature work reported by researchers on quinazoline and specifically quinazolin-4-one for their various pharmacological activities. This review might be helpful in the development of these novel lead molecules to potential drug candidates for future prospect.

Keywords: Quinazolin-4-one, Anti HIV, Anti cancer, novel lead molecules.

INTRODUCTION

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[1-5](Fig.1) are classes of fused heterocycles that are of considerable interest because of the diverse range of their biological activities such as, anti-microbial, 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.

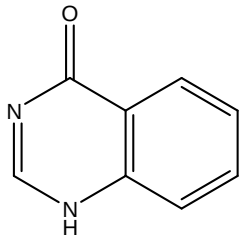


Quinazolin

Fig.1

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.[6]

Pharmacologically quinazolin particularly quinazolin-4-one (Fig.2) 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. These compounds possess versatile type of biological activities; some of these are well known for their anticancer[7-8], antitubercular[9], antibacterial[10], antifungal[11], anti-HIV[12], anthelmintic[13], anti-inflammatory[14] and antihypertensive activities[15].



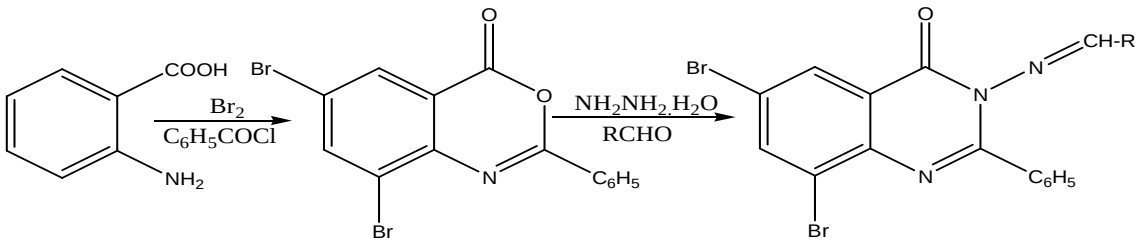
quinazolin-4-one

Fig.2

CHEMISTRY

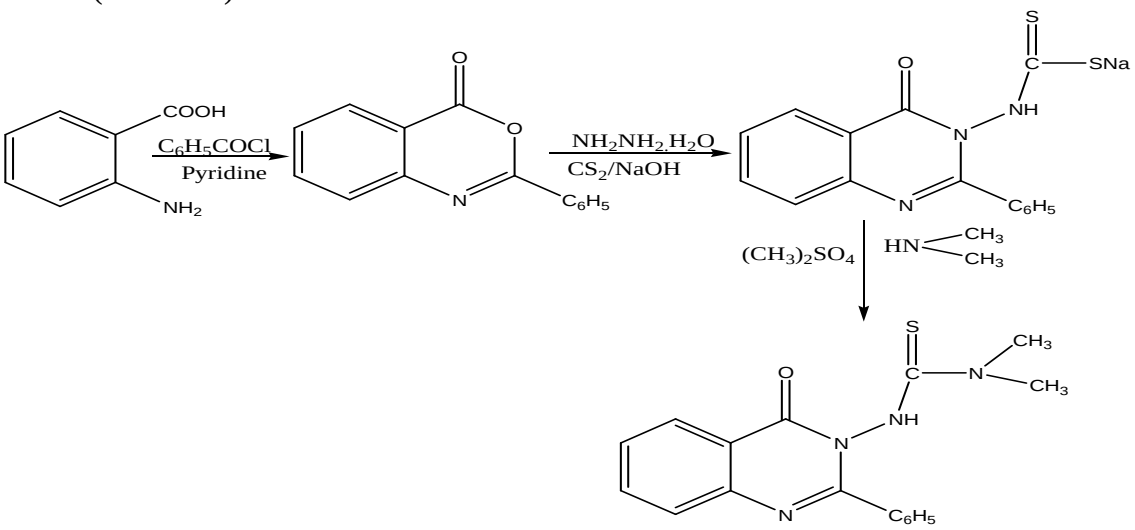
Various methods have been proposed by various researchers for the synthesis of quinazolin-4-ones as mentioned below. Anthranilic acid is the key reagent for the synthesis of quinazolin-4-ones.

Panneerselvam P. *et al.* (2009) synthesized some Schiff bases of 3-amino-6, 8-dibromo-2 phenylquinazolin-4(3H)-ones.[16] (Scheme 1)



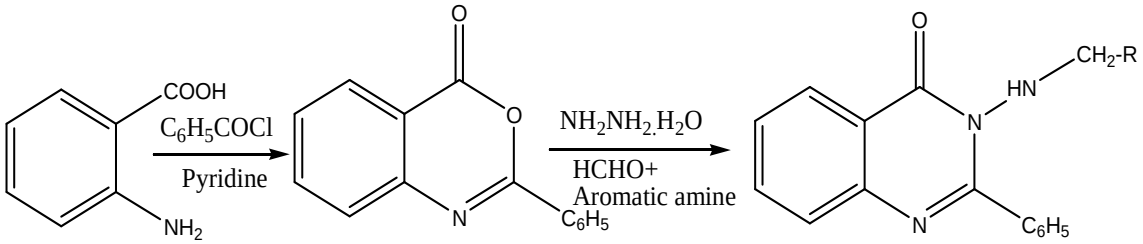
Scheme 1

Alagarsamy V.*et al*. (2002) synthesized some novel 2-phenyl-3-substituted quinazolin-4(3*H*) Ones.[17] (Scheme 2)



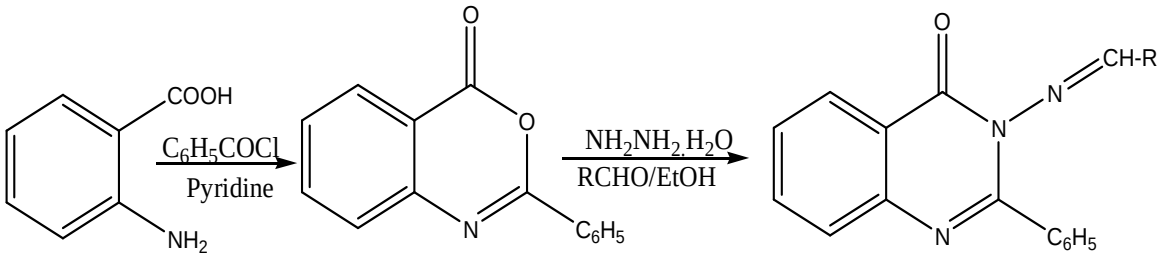
Scheme 2

Saravanan S. *et al.* (2010) synthesized some 2-phenyl 3-substituted quinazolin-4(3*H*)-ones derivatives.[18] (Scheme 3)



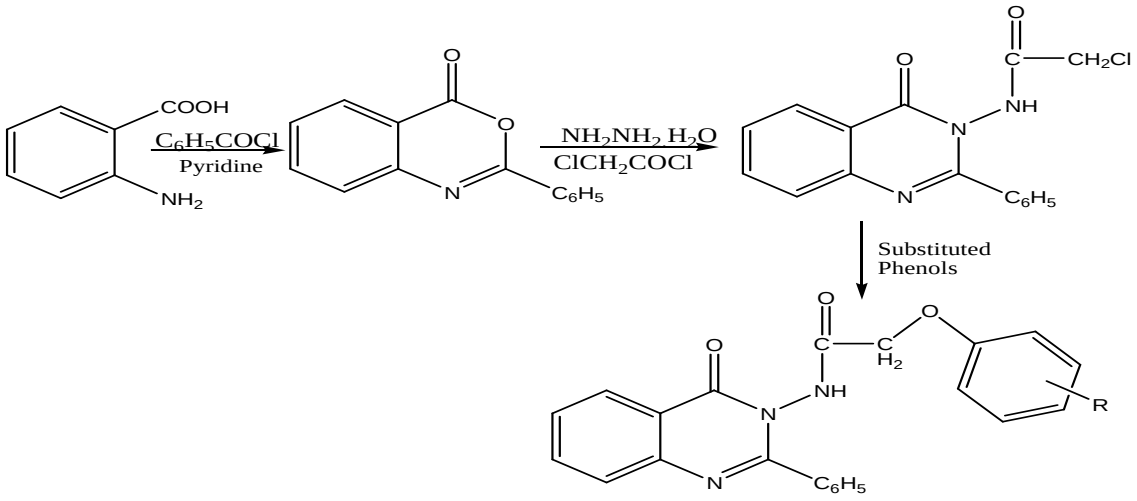
Scheme 3

Mariappan G.*et al*. (2011) synthesized quinazolinone fused Schiff bases.[19] (Scheme 4)



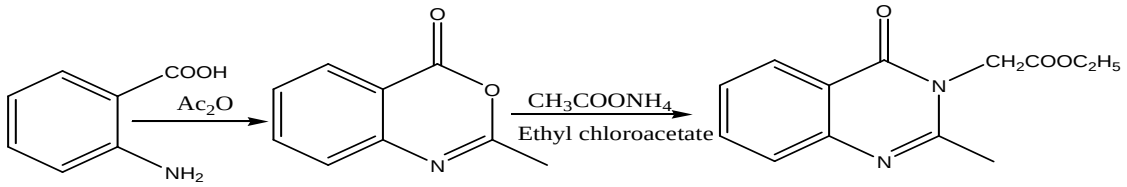
Scheme 4

Kohli Deepti *et al.* (2009) synthesized some novel quinazolinone derivatives.[20] (Scheme 5)



Scheme 5

Kotgire S.Sandip *et al.* (2010) Synthesis of ethyl 2-(2-methyl-4-oxoquinazolin-3(4*H*)-yl) acetate as important analog and intermediate of 2,3 disubstituted quinazolinones.[21](Scheme 6)



Scheme 6

PHARMACOLOGICAL ACTIVITIES

1. Analgesic and anti-inflammatory agents

Some novel quinazolin-4-one derivatives show promising analgesic and anti-inflammatory activities. The novel derivatives of quinazolines mentioned might be beneficial in terms of biological activity for which further studies can be done to confirm it as a potential drug candidate.

Alagarsamy V.*et al*. (2002) synthesized some novel 2-phenyl-3-substituted quinazolin-4(3*H*) ones **(**Fig.3) derivatives and evaluated them for analgesic and anti-inflammatory activity compared with Diclofenac sodium as standard drug.[17]

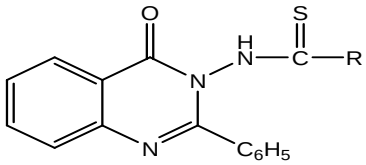
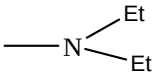
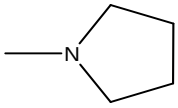
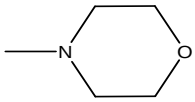
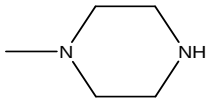
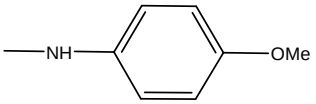
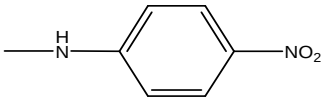
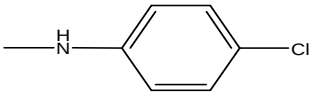
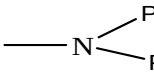
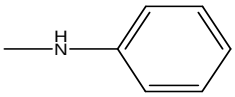


Fig.3

S. No.	Substitution(R)	Activities Reported
3a.		Analgesic and anti- inflammatory activity
3b.		Analgesic and anti- inflammatory activity
3c.		Analgesic and anti- inflammatory activity
3d.		Analgesic activity
3e.		Analgesic activity
3f.		Analgesic activity
3g.		Analgesic activity
3h.		Analgesic activity
3i.		Analgesic activity
3j.		Analgesic activity
3k.		Analgesic activity

Mariappan G.*et al*. (2011) synthesized quinazolinone fused Schiff bases **(**Fig.4**)** and evaluated them for anti-inflammatory activity.[19]

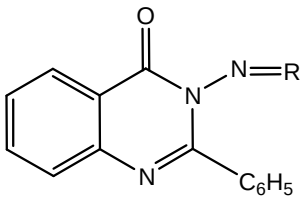


Fig.4

S. No.	Substitution(R)	Activities Reported
4a.	2-nitrobenzaldehyde	Anti-inflammatory activity
4b.	Cinnamaldehyde	Anti-inflammatory activity
4c.	Acetaldehyde	Anti-inflammatory activity
4d.	Furfuraldehyde	Anti-inflammatory activity
4e.	2-chlorobenzaldehyde	Anti-inflammatory activity
4f.	3-methoxy-4-hydroxybenzaldehyde	Anti-inflammatory activity

B.A. Rather *et .al* (2010) also worked on quinazolin4-3(H) ones **(**Fig.5) to produce different compounds of varied potency when compared with the standard aspirin and indomethacin[22].

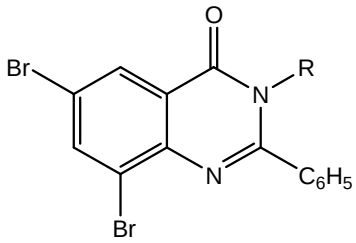
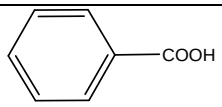
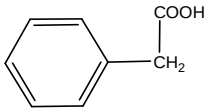


Fig.5

S. No.	Substitution(R)	Activities Reported
5a		Analgesic and anti- inflammatory activity
5b		Analgesic and anti- inflammatory activity

2. Anti-microbial agents

Anti-microbials cover large spectrum biological activities like anti bacterial, anti fungal, anti viral, anti leshmanial, antiprotozoal, antiplasmodial etc. Several derivatives of quinazolins possess potential anti-microbial activities.

Panneerselvam P. *et al.* (2009) synthesized some Schiff bases of 3-amino-6, 8-dibromo-2 phenylquinazolin-4(3H)-ones (Fig.6) and these compounds are screened as antimicrobial agents.[16]

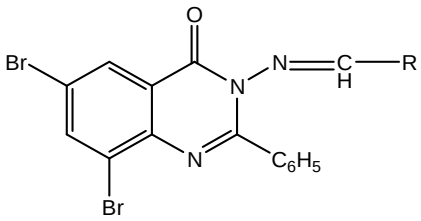
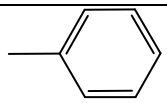
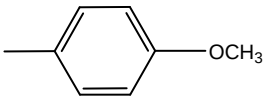
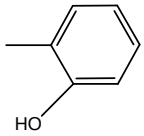
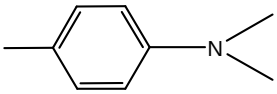
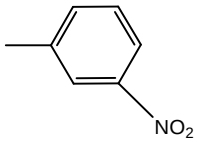
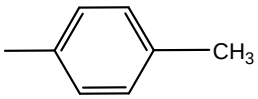
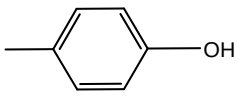
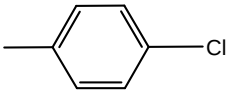
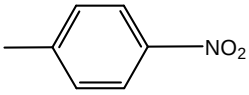
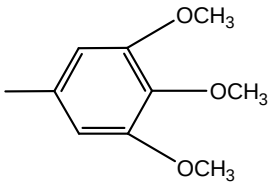
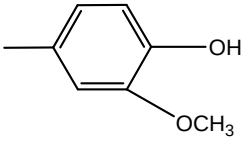
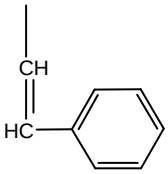


Fig.6

S. No.	Substitution(R)	Activities Reported
6a.		Antifungal and antibacterial activity
6b.		Antifungal and antibacterial activity
6c.		Antifungal and antibacterial activity
6d.		Antifungal and antibacterial activity
6e.		Antifungal and antibacterial activity
6f.		Antifungal and antibacterial activity
6g.		Antifungal and antibacterial activity
6h.		Antifungal and

		antibacterial activity
6i.		Antifungal and antibacterial activity
6j.		Antifungal and antibacterial activity
6k.		Antifungal and antibacterial activity
6l.		Antifungal and antibacterial activity

Raghavendra M.*et al*. (2007) synthesized some novel substituted 2-Imidazolyl-*N*-(4-oxo-quinazolin-3(4*H*)-yl)-acetamides derivatives **(**Fig.7) and evaluated the Antimicrobial activities.[23]

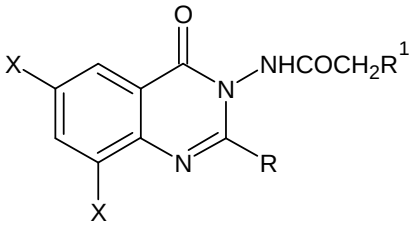


Fig.7

S. No.	Substitutions			Activities Reported
	X	R	R^1	
7a.	H	C_6H_5	Imidazolyl	Antibacterial activity
7b.	H	C_6H_5	2-Methyl Imidazolyl	Antitubercular activity
7c.	H	C_6H_5	2-Methyl benziimidazolyl	Antibacterial activity
7d.	H	C_6H_5	Benziimidazolyl	Antibacterial activity
7e.	Br	C_6H_5	Imidazolyl	Antibacterial activity
7f.	Br	C_6H_5	2-Methyl Imidazolyl	Antitubercular activity
7g.	Br	C_6H_5	2-Methyl benziimidazolyl	Antibacterial activity
7h.	Br	C_6H_5	Benziimidazolyl	Antibacterial activity
7i.	Br	CH_3	Imidazolyl	Antibacterial activity
7j.	Br	CH_3	2-Methyl Imidazolyl	Antibacterial activity

7k.	Br	CH_3	2-Methyl benziimidazolyl	Antibacterial activity
7l.	Br	CH_3	Benziimidazolyl	Antibacterial activity
7m.	Br	C_3H_7	Imidazolyl	Antibacterial activity
7o.	Br	C_3H_7	2-Methyl Imidazolyl	Antibacterial activity
7p.	Br	C_3H_7	2-Methyl benziimidazolyl	Antitubercular activity
7q.	Br	C_3H_7	Benziimidazolyl	Antibacterial activity

Nanda A.K *et al*. (2007) synthesized some 3-(arylideneamino)-2-phenylquinazoline-4(3H)-ones derivatives **(**Fig.8) and screened them for antibacterial activity.[24]

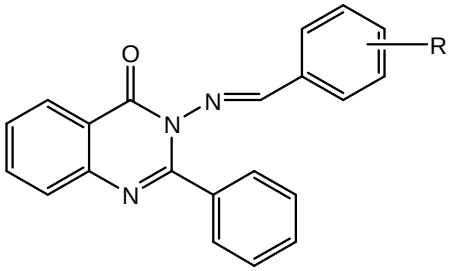


Fig.8

S. No.	Substitution(R)	Activities Reported
8a.	2’ ’ –OH	Antibacterial activity
8b	4’ ’ –OCH_3	Antibacterial activity
8c.	4’ ’ –F	Antibacterial activity
8d.	4’ ’ –N(CH_3)	Antibacterial activity
8e.	4’ ’ –Cl	Antibacterial activity
8f.	3’ ’ –OCH_3	Antibacterial activity
8g.	4’ –OH	Antibacterial activity
8h.	4’ ’ –OCH_3	Antibacterial activity
8i.	4’ ’ –OH	Antibacterial activity
8j.	4’ ’ –NO_2	Antibacterial activity
8k.	H	Antibacterial activity

Ilango K *et al*. (2010) synthesize newer quinazolin-4- (3H)-one clubbed isatin derivatives (Fig.9) as potent antimicrobial agents.[25]

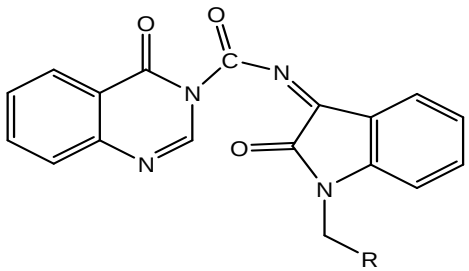
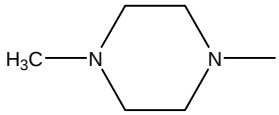
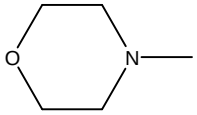
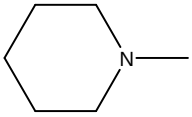
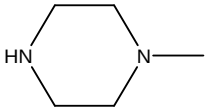
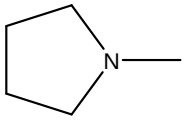
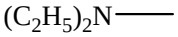


Fig.9

S. No.	Substitution(R)	Activities Reported
9a.		Antifungal and antibacterial activity
9b,		Antifungal and antibacterial activity
9c.		Antifungal and antibacterial activity
9d.		Antifungal and antibacterial activity
9e.		Antifungal and antibacterial activity
9f.		Antifungal and antibacterial activity

Ramarao *et.al* (2010) worked on several new quinazolinone formazans (Fig.10) which were evaluated for their anti microbial and antihelminthic property which were comparable to ciprofloxacin, fluconazole, albendazole and piperazine citrate respectively, among whom the following were found to be potent.[26]

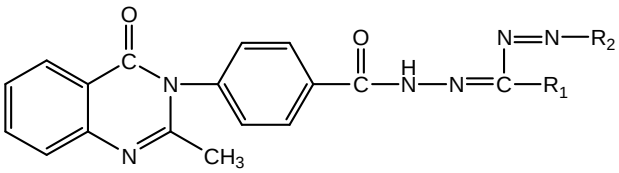


Fig.10

S. No.	Substitution		Activities Reported
	R_1	R_2	
10a.	$C_6H_4NO_2$	C_6H_3FCl	Antimicrobial and antifungal activity
10b.	$C_6H_6N(CH_3)_2$	C_6H_4Cl	Antimicrobial and antifungal activity
10b.	$C_6H_3(OH)(OCH_3)$	C_6H_3FCl	Antimicrobial and antifungal activity

3. Anticonvulsant agents

Some quinazolinone derivatives shows promising anticonvulsant activities. For the future prospect quinazolinone can be the suitable candidate for the treatment of convulsions.

Kumar A. *et al.* (2010) synthesis, characterization and biological activity of various thiadiazolylpyridinyl (Fig.11) /indolylisoxazolyl (Fig.12) quinazolinone-4-ones.[27]

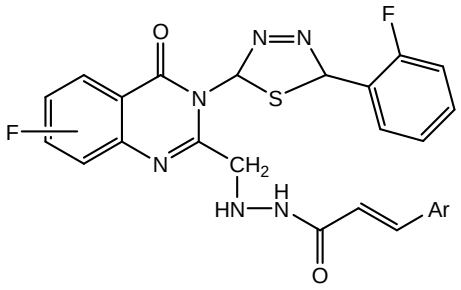


Fig.11

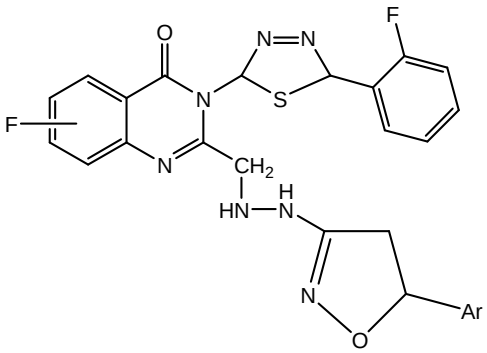
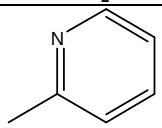
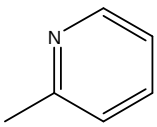
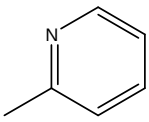
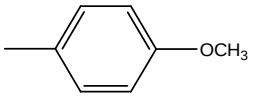
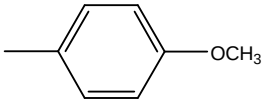
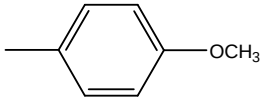
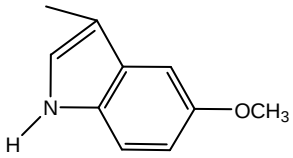
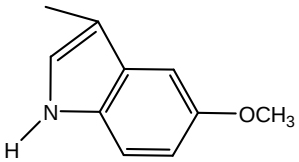
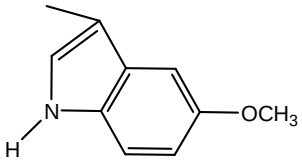
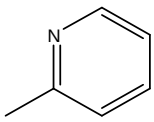
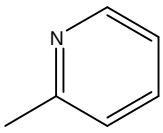
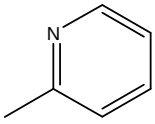
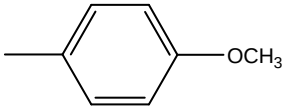
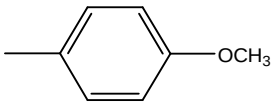
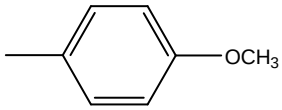
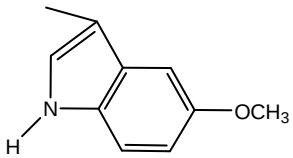
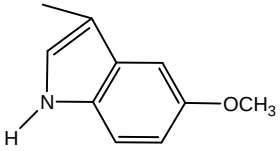
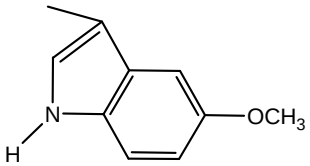


Fig.12

S. No.	Substitutions		Activities Reported
	R_1	R_2	
11a.	H		Anticonvsant and antipsycotic Activity
11b.	6-Br		Anticonvsant and antipsycotic activity
11c.	6,8-Br		Anticonvsant and antipsycotic activity

11d.	H		Anticonvsant and antipsycotic activity
11e.	6-Br		Anticonvsant and antipsycotic activity
11f.	6,8-Br		Anticonvsant and antipsycotic activity
11g.	H		Anticonvsant and antipsycotic activity
11h.	6-Br		Anticonvsant and antipsycotic activity
11i.	6,8-Br		Anticonvsant and antipsycotic activity
12a.	H		Anticonvsant and antipsycotic Activity
12b.	6-Br		Anticonvsant and antipsycotic activity
12c.	6,8-Br		Anticonvsant and antipsycotic activity
12d.	H		Anticonvsant and antipsycotic activity

12e.	6-Br		Anticonvsant and antipsycotic activity
12f.	6,8-Br		Anticonvsant and antipsycotic activity
12g.	H		Anticonvsant and antipsycotic activity
12h.	6-Br		Anticonvsant and antipsycotic activity
12i.	6,8-Br		Anticonvsant and antipsycotic activity

Ghany abdel *et al*. (2009) synthesized some new derivatives of 3*H*-quinazolin- 4-one **(**Fig.13) through condensation reaction of their potassium salts with methyl, ethyl and phenyl isocyanate and synthesized compounds showed promising anticonvulsant activity.[28]

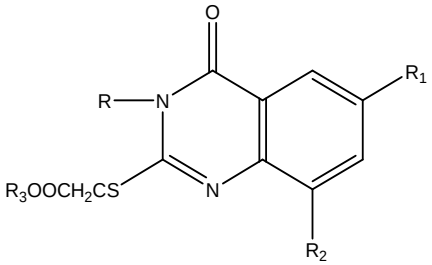


Fig.13

S. No.	Substitutions				Activity Reported
	R	**R_1**	**R_2**	**R_3**	
13.	CH_3	H	H	Phenyl	Anticonvulsant activity

Georgey Hanan *et al*. (2008) synthesized quinazolin-4-(3*H*)-one derivatives **(**Fig.14) as Anticonvulsant activity.[29]

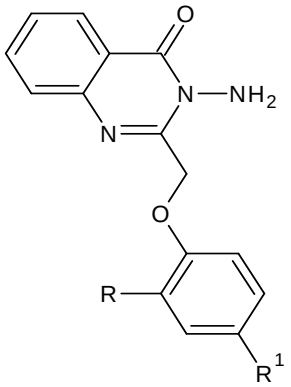


Fig.14

S. No.	Substitutions		Activity Reported
	R_1	R_2	
14.	H	Cl	Anticonvulsant activity

Vaidya A. Niteen *et al.* (1983) synthesized 3,4-Dihydro-4-oxoquinazolin derivative(Fig.15,16) by the use of 2-amino-3-cyano-4,5-dimethyl furan and methyl acrylate and evaluated the anticonvulsant activity of synthesized compound.[30]

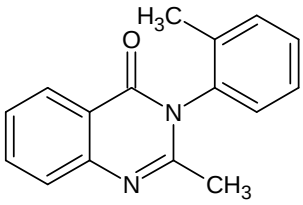


Fig.15

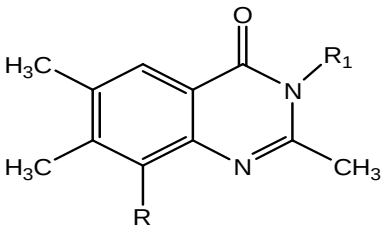


Fig.16

S. No.	Substitutions		Activity Reported
	R	R_1	
16.	COOH	p-C_6H_4	Anticonvulsant activity

4. Anti HIV agents

Quinazolin-4-(3H)-one is a versatile lead molecule for the design of potential bioactive agents. Alagarsamy *et al*. (2000) [31]Shah *et al.* (1995) [32] and Desai *et al.* (1998) [33], reported anti-hiv activity of 2-phenyl-3-substituted quinazolin-4-(3H)-ones. the literatures also reinforces that the 2-phenyl-3-substituted quinazolin-4-(3H)-ones. A large number of quinazolines have been synthesized and studied for wide range of anti-viral activity but the anti-viral activities of quinazolines against viruses has not been well explored.

Saravanan S. *et al.* (2010) synthesis, antiviral and studies of some 2-phenyl 3-substituted quinazolin-4(3H)ones (Fig.17).[18]

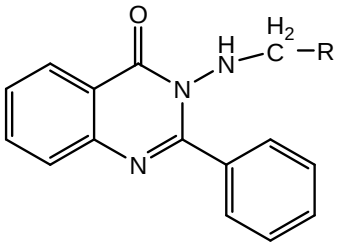
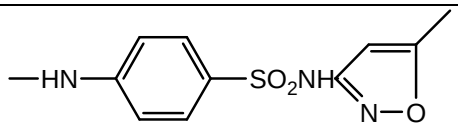
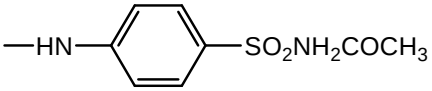
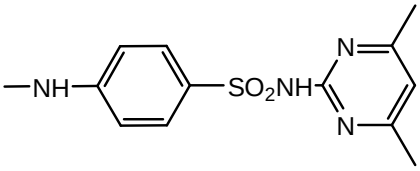
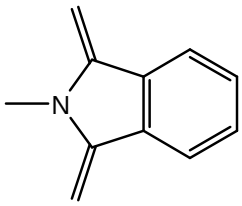
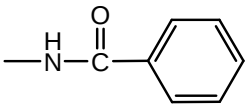
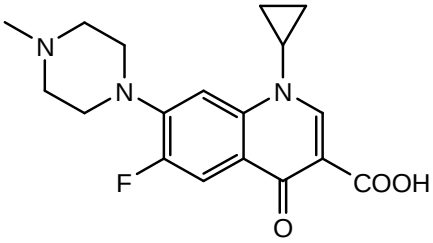
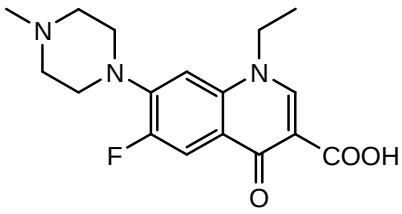
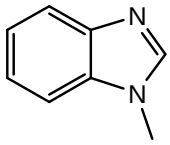
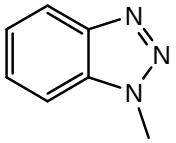
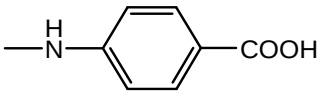
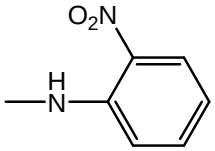


Fig.17

S. No.	Substitution(R)	Activities Reported
17a.		Anti HIV
17b.		Anti HIV
17c.		Anti HIV
17d.		Anti HIV
17e.		Anti HIV
17f.		Anti HIV
17g.		Anti HIV

17h.		Anti HIV
17i.		Anti HIV
17j.		Anti HIV
17k.		Anti HIV

5. Antiparkinson agents

Parkinsonism is caused due to deficiency of dopamine. After the attachment of dopamine with some quinazolin, these derivative shows promising antiparkinson activity.

Kumar Sunil *et al*. (2010) synthesized a series of 3-substituted phenyl 2- (3,4-dihydroxy phenyl ethyl amino)-6-substituted quinazolin-4-(3H) ones **(**Fig.18,19,20) by the reaction of 3-Substituted phenyl -2-methylbromo-6-substituted quinazolin-4-(3H) ones with dopamine (3,4 dihydroxy phenyl ethyl amine) and has shown most potent antiparkinsonian activity. [34]

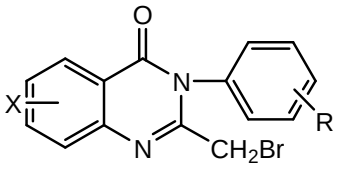


Fig.18

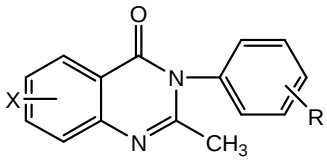


Fig.19

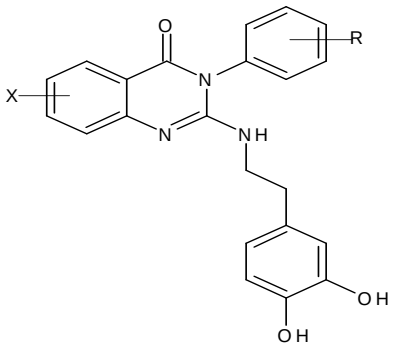


Fig.20

S. No.	Substitutions		Activity Reported
	X	R	
18a.	H	H	Antiparkinsonian activity
18b.	H	2-Cl	Antiparkinsonian activity
18c.	H	4-OCH_3, 2-CH_3	Antiparkinsonian activity
18d.	H	2-OCH_3	Antiparkinsonian activity
18e.	Br	H	Antiparkinsonian activity
18f.	Br	2-Cl	Antiparkinsonian activity
18g.	Br	4-OCH_3, 2-CH_3	Antiparkinsonian activity
18h.	Br	2-OCH_3	Antiparkinsonian activity
19a.	H	H	Antiparkinsonian activity
18b.	H	2-Cl	Antiparkinsonian activity
19c.	H	4-OCH_3, 2-CH_3	Antiparkinsonian activity
18d.	H	2-OCH_3	Antiparkinsonian activity
19e.	Br	H	Antiparkinsonian activity
19f.	Br	2-Cl	Antiparkinsonian activity
19g.	Br	4-OCH_3, 2-CH_3	Antiparkinsonian activity
19h.	Br	2-OCH_3	Antiparkinsonian activity
20a.	H	H	Antiparkinsonian activity
20b.	H	2-Cl	Antiparkinsonian activity
20c.	H	4-OCH_3, 2-CH_3	Antiparkinsonian activity
20d.	H	2-OCH_3	Antiparkinsonian activity
20e.	Br	H	Antiparkinsonian activity
20f.	Br	2-Cl	Antiparkinsonian activity
20g.	Br	4-OCH_3, 2-CH_3	Antiparkinsonian activity
20h.	Br	2-OCH_3	Antiparkinsonian activity

6. Antitubercular agents

There are no promising quinazolines marketed presently in the category of tuberculosis. But several novel molecules have been synthesized in the past which showed promising results but unfortunately could not make it up to the marketing stage.

Rajasekaran S *et al.* (2010) synthesize some 2-phenyl-3-substituted quinazolin-4(3*H*)-ones **(**Fig.21) and evaluate the antitubercular activities.[34]

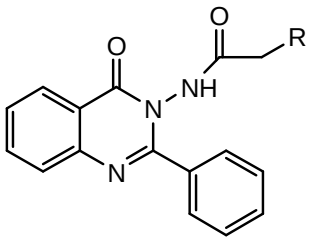
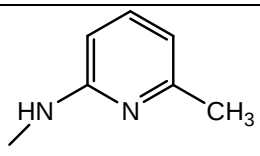
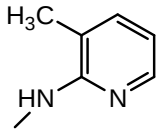
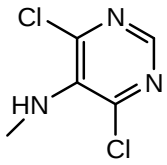
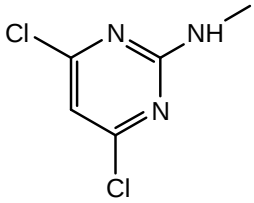
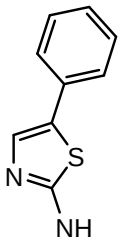
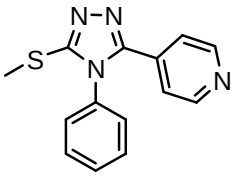
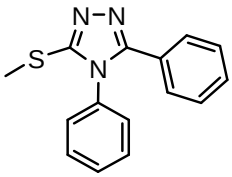


Fig.21

S. No.	Substitution(R)	Activities Reported
21a.		Antitubercular and

		Antioxidant activity
21b.		Antitubercular and Antioxidant activity
21c.		Antitubercular and Antioxidant activity
22d.		Antitubercular and Antioxidant activity
22e.		Antitubercular and Antioxidant activity
22f.		Antitubercular and Antioxidant activity
22g.		Antitubercular and Antioxidant activity

Pattan R.S *et al.* (2006) synthesis of N-3(4-(4-chlorophenyl thiazol-2-yl)-(2-(amino) methyl) quinazolin4(3H)-one **(**Fig.22) and their derivative for antitubercular activity.[35]

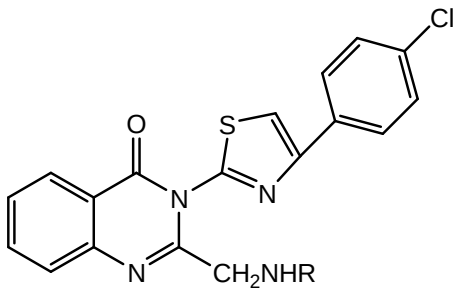
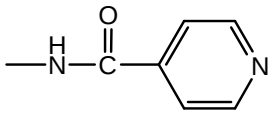
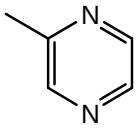
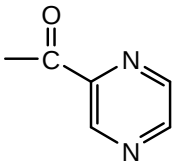
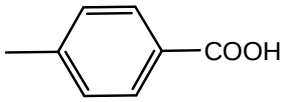
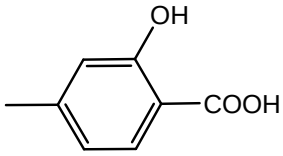


Fig.22

S. No.	Substitution(R)	Activity Reported
22a.	C_6H_4Cl	Antitubercular activity
22b.	C_6H_4F	Antitubercular activity
22c.	$C_6H_4NO_2$	Antitubercular activity
22d.	$C_6H_4CH_3$	Antitubercular activity
22e.	$C_6H_4OCH_3$	Antitubercular activity
22f.		Antitubercular activity
22g.		Antitubercular activity
22h.		Antitubercular activity
22i.		Antitubercular activity
22j.		Antitubercular activity

7. Anti cancer agents

Quinazolines occupy a promising section in the anti-cancer activity because of their specificity. There are so many researcher synthesize the quinazolin derivatives as anti cancer drug.

Conconi *et al.* (2010) synthesized several dioxolane, dioxane (Fig.23), and dioxepine quinazoline derivatives and stated that size of the fused dioxygenated ring was crucial for the biological activity, the dioxane derivatives being the most promising class of this series. Derivatives were able to counteract EGF-induced EGFR phosphorylation and showed better or at least comparable

potency with respect to PD153035 of which the following compound was promising.[36]

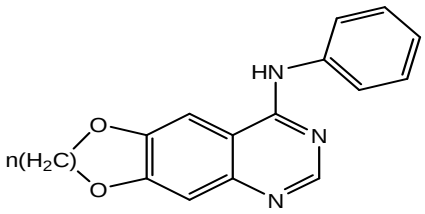


Fig.23

Sirisoma *et al.* (2010) synthesized several N-methyl-4-(4-methoxyanilino) quinazolines (Fig.24) and stated that substitution at the 5-, 6-, 7-positions of the quinazoline and replacement of the quinazoline by other nitrogen-containing heterocycles. Replacement of the quinazoline ring with a quinoline, a benzo[d][1,2,3]triazine, or an isoquinoline ring showed that the nitrogen at the 1-position is important for activity, while the carbon at the 2-positioncan be replaced by a nitrogen and thenitrogen at the 3-position can be replaced by a carbon. The following compounds were found to be potent when compared with standard Azixa.[37]

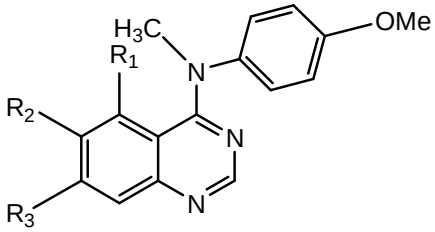


Fig.24

S. No.	Substitutions			Activity Reported
	R_1	R_2	R_3	
24a.	H	NH_2	H	Anti cancer activity
24a.	H	NO_2	H	Anti cancer activity

8. Anti-Histaminic agents:

In the recent days lot of research is being done in the category of histaminic antagonists with relatively less sedation effect than existing drugs. Some quinazoline possess good antihistaminic properties.

Alagaraswamy et al. synthesized several 4-(3-ethylphenyl)-1-substituted-4*H* [1,2,4] triazolo [4,3-*a*]quinazolin-5-ones (2009) [38],4-(4-ethylphenyl)-1-substituted-substituted-4*H* [1,2,4] triazolo [4,3-*a*] quinazolin-5-ones(2008) [39] and 1-substituted-4-cyclohexyl-4H-[1,2,4] triazolo [4,3-a] quinazolin-5-ones(2007) [40].

It was found that by varying substitution over the first position of the triazolo quinazoline ring therewas variation in the biological activity. The presence of methyl group showed better activity than the unsubstituted compound. With increased lipophilicity the activity remained but further

increase in lipophilicity led to a decrease in activity. Replacement of the methyl group by other groups decreased the activity. The anti-histaminic potential was tested in vivo by comparing with Chlorpheniramine maleate in which the following compound showed promising anti histaminic activity with less sedation.

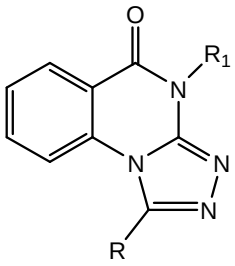
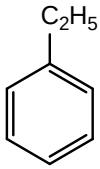
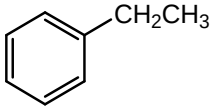


Fig.25

S. No.	Substitutions		Activity Reported
	R	**R_1**	
25a.	CH_3		Antihistaminic activity
25b.	CH_3		Antihistaminic activity
25c.	CH_3		Antihistaminic activity

CONCLUSION

Quinazolin-4-one is a unique template that is associated with several biological activities. This article high lightened research work of many researchers reported in literature for different pharmacological activities on quinazolin-4-one compounds synthesized. The review has presented comprehensive details of quinazolin-4-one analogues, potent compounds reported for particular pharmacological activity and the method or technique involved in evaluation process. More investigations must be carried out to evaluate more activities of quinazolin-4-one for many diseases whose treatment are difficult in the medical sciences.

REFERENCES

[1] V. Alagarsamy, V. Rajasolomon, R. Meena, K.V. Ramseshe, *Biol. Pharm. Bull*., **2005**, 28, 1091-1094 .

[2] P. Kant, *Indian J. Heterocycl. Chem*., **2006**, 15, 221-224.
[3] G.A. El-Hiti, M.F. Abdel-Megeed, T.M.M. Zied, *Indian J. Chem*., **2002**, 41B, 1519-1522.
[4] V. Alagarsamy, A. Thangathirupathy, S.C. Mandal, S. Rajasekaran, S. Vijayakumar, R. Revathi, J. Anburaj, S. Arunkumar, S. Rajesh, *Indian J. Pharm. Sci*. **2006**, 68, 108-111
[5] P. Nandy, M.T. Vishalakshi, A.R. Bhat, *Indian J. Heterocycl. Chem*. **2006**, 15, 293-294.
[6] Y. Jin, H.Y. Li, L.P. Lin, J.Z. Tan, J. Ding, X.M. Luo, Y. Long, Q,*Bioorg. & Med.Chem*. **2005**, 13, 5613-5622.
[7] J.B. Jiang, D.P. Hesson, B.A. Dusak, D.L. Dexter, G.J. Kang, E. Hamel, *J. Med. Chem.* **1990**, 33, 1721.
[8] Y. Xia, Z.N. Yang, M.J. Hour, S.C. Kuo, P. Xia, K.F. Bastow, Y. Nakanishi, P.T. Nampoothiri, E. Hamel, K.H. Lee, *Bioorg. Med. Chem. Lett.* **2001**, 11, 1193.
[9] P.B. Trivedi, N.K. Undavia, A.M. Dave, K.N. Bhatt, N.C. Desai, *Indian J. Chem.* **1993**, 32B, 497.
[10] N.A. Gangwal, U.R. Kothawade, A.D. Galande, D.S. Pharande, A.S. Dhake, *Indian. J. Het. Chem.* **2001**, 10, 291.
[11] J. Bartroli, E. Turmo, M. Alguero, E. Boncompte, M.L. Vericat, L. Conte, J. Ramis, M. Merlos, J.G. Rafanell, J. Forn, *J. Med. Chem.* **1998**, 41, 1869.
[12] V. Alagarsamy, R. Revathi, S. Meena, K.V. Ramaseshu, S. Rajasekaran, E. De-Clerco, *Indian. J. Pharm. Scien.* **2004**, 4, 459.
[13] D.P. Gupta, S. Ahmad, K. Ashok, K. Shanker, *Indian. J. Chem.* **1988**, 27B, 1060.
[14] Q. Chao, L. Deng, H. Shih, L.M. Leoni, D. Genini, D.A. Carson, H.B. Cottam, *J. Med. Chem.* **1999**, 42, 3860.
[15] W.B. Wright, A.S. Tomcufcik, P.S. Chan, J.W. Marsico, J.B. Press, *J. Med. Chem.***1987**, 30, 2277.
[16] P. Panneerselvam, B.R. Ahmad, R.D. Sankar, R.N. Kumar, *European Journal of Medicinal Chemistry*, **2009**, 44, 2328-233.
[17] V. Alagarsamy, V.R. Salomon, G. Vanikavitha, *Biol. Pharm. Bull.* **2002**, 25, 11, 1432-1435.
[18] S. Saravanan, P. Selvam, S. Kumar, D.E. Clercq, *International journal of Pharmacy and Pharmaceutical Science*, **2010**, 2, 3, 0975-1491.
[19] G. Mariappan, B.P Saha., S. Dutta, A. Majumder, S. Saha, *Ind J Pharm Edu Res*, Jan-Mar, **2011**, 45, 1, 78-82.
[20] D. Kohli, R.S. Hashim, S. Vishal, M. Sharma, A. Kumar Singh, *International journal of Pharmacy and Pharmaceutical Science*, 2009, 1, 1, 163-169.
[21] S.S. Kotgire, S.K. Mahajan, S.V. Amrutkar, U.D. Bhagat, *J. Pharm. Sci. & Res*. 2010, 2, 8, 518-520.
[22] B.A. Rather, T. Raj, A. Reddy, M.P.S. Ishar, S. Sivakumar, P. Paneerselvam, *Arch. Pharm. Chem. Life Sci*., 2010, 343,108 –113.
[23] M.N. Raghavendra, P. Thampi, P.M. Gurubasavarajaswamy, D. Shriram, *Chem. Pharm.Bull*. 2007, 55, 11, 1615—1619.
[24] A.K. Nanda, S. Ganguli, R. Chakraborty. *Molecules*, 2007, 12, 2413-2426.
[25] K. Ilango, P. Valentina, N. Umarani, K.P. Beena, *Int. J. Res. Pharm. Sci*. **2010**,1, 2, 133-138.
[26] R.R. Nadendla, K. Mukkantil, G.S. Rao, A.N. Babu, *Current Trends in Biotechnology and Pharmacy*, **2010**, 4, 1, 545-550.
[27] A. Kumar, H. Kaur, S. Kumar, K.K. Saxena, *International Journal of Pharma and Bio Sciences*, **2010**, 1, 2, 1-15.

[28] A. Ghany, M.H.A. Wahab, *Acta Pharm.* **2003**, 53, 127–138.
[29] H. Georgey, N.A. Gawad, S. Abbas, *Molecules*, **2008**, 13, 2557-2569.
[30] N.A. Vaidya, C.H. Panos, A. Kite, B. Itturian, *Journal Medicinal Chemistry*, **1983**, 26, 1422-1425.
[31] V. Alagarsamy, U.S. Pathak, S.N. Pandaya, D. Sriram, E. De Clercq, *Indian Journal of Pharmaceutical Sciences*, **2000**, 66, 433-437.
[32] B.R. Shah, J.J. Bhatt, H.H. Patel, N.K. Undavia, P.B. Trivedi, N.C. Desai, *Indian Journal of Chemistry*,**1995**, 34, 201-208.
[33] N.C. Desai, N.K. Undavia, P.B. Trivedi Dipika Dave, G.D. Vyas, *Indian Journal of Experimental Biology*, **1998**, 36, 1280-1283.
[34] S. Rajasekaran, Gopal krishna Rao, Sanjay Pai, *Der Pharma Chemica*, **2010**, 2, 5,153-163.
[35] R.S. Pattan, K.V. Reddy, F.V. Manvi, B.G. Desai, A.R. Bhat, *Indian journal of chemistry*, **2006**, 45B, 1778-1781.
[36] A. Chilin, M.T. Conconi, G. Marzaro, A. Guiotto, L. Urbani, F. Tonus, J. Med.Chem. **2010**, 53, 1862–1866.
[37] N. Sirisoma, A. Pervin, H. Zhang, S. Jiang, J.A. Willardsen, M.B. Anderson, *Bioorganic & Medicinal Chemistry Letters*, **2010**, 20, 2330–2334,
[38] V. Alagarsamy, K. Kavitha, M.P. Kumar, V.R. Solomon, J. kumar, D.S. Kumar, *Acta Pharm.* **2009**, 59, 97–106.
[39] V. Alagarsamy, R. Solomon, P. Parthiban, K. Dhanabal, S. Murugesan, G.V. Saravana, *J. Heterocyclic Chem.* **2008**, 45, 709.
[40] V.Alagarsamy, S.Meena, K.V. Ramaseshu, V.R. Solomon, T. Kumar, *Chem Biol Drug Des*, **2007**, 70, 158–163.