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Formulation Development and Evalution of Sustained Release Quetiapine Tablet

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A B S T R A C T

The main objective of the present work was to develop sustained release tablets of quetiapine fumarate using different polymers hydroxy propyl methyl cellulose (HPMC) and PVP K30. Varying ratios of drug and polymer like were selected for the study. Used in Cross Carmellose Sodium super disintegration agent. Quetiapine fumarate used in the treatment of schizophrenia. Quetiapine Fumarate was prepared by using direct compression method. IR spectral analysis study showed that there was no drug interaction with formulation additives of the tablet. The blend was examined for the pre- compression parameters results were within prescribed limits and indicated good free flowing property. The prepared tablets formulations were evaluated for post-compression parameters. Evaluation of physical properties of tablet, the in vitro release study was performed in 0.1 N HCl pH 1.2 for 2 hrs and in phosphate buffer pH 6.8 up to 14 hrs. QFSRT/07 was comparable with the prepared batch products. Stability studies ($30^0 \pm 2^0$C and 60±5% RH) for 1 months indicated that quetiapine fumarate was stable in the tablets. The FTIR study revealed that there was no chemical interaction between drug and excipients. All the post-compression parameter are evaluated were prescribed limits and results were within IP acceptable limits. Formulation F_7 in-vitro drug release showed 98.82 within 14 hours. Formulation F_1 to F_4 showed 78.64, 81.68, 94.41, 85.42 release after 14 hours.F_5, F_6, F_8 showed 78.56, 84.51, 90.71.drug release in release in 14 hours. The stability study conducted as per the ICH guidelines and the formulations were found to be stable. Microbiology study not found any bacteria.

Keywords: Quetiapine Fumarate, Microcrystalline cellulose, Cross Carmellose sodium, Poly vinyl pyrrolidone k 30, hydroxy propyl methyl cellulose.

A R T I C L E I N F O

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1. Introduction

Antipsychotics (also known as neuroleptics or major tranquilizers) are a class of psychiatric medication primarily used to manage psychosis (including delusions, hallucinations, or disordered thought), in particular in schizophrenia and bipolar disorder, and are increasingly being used in the management of non-psychotic disorders. The word neuroleptics originates from the Greek word "νεῦρον", *neuron* ("nerve") and *lepsis* ("seizure" or "fit"). Quetiapine is a Quetapine fumarate, belongs to groups of atypical antipsychotics. This medication is used to treat certain mental/ mood conditions (such as schizophrenia, bipolar disorder, mania or depression associates with bipolar disorder. Quetiapine is known as an anti-psychotic drug (atypical type). It works by helping to restore the balance of certain natural substances (neurotransmitters) in the brain.

First-generation antipsychotics, known as typical antipsychotics, were discovered in the 1950s. Most second-generation drugs, known as atypical antipsychotics, have been developed more recently, although the first atypical antipsychotic, clozapine, was discovered in the 1950s and introduced clinically in the 1970s. Both generations of medication tend to block receptors in the brain's dopamine pathways, but atypical tend to act on serotonin receptors as well. The newer agents, often called atypical antipsychotics, are effective in treating both the positive and negative symptoms of schizophrenia and are associated with fewer neurological- and endocrine-related side effects compared to the older agents. Quetiapine fumarate is the most recently introduced atypical antipsychotic and is indicated for the management of the manifestations of psychotic disorders and schizophrenia. All antipsychotic drugs tend to block D_2 receptors in the dopamine pathways of the brain. This means that dopamine released in these pathways has less effect. Which are believed to be the areas of the brain responsible for the therapeutic effects of antipsychotics. In contrast to most standard antipsychotics and some atypical antipsychotics, quetiapine effects on the nigrostriatal dopamine system, which is responsible for the extra pyramidal (or motor) side effects, are minimal.

Quetiapine also has minimal activity on dopamine receptors in the tuberoinfundibular dopamine system, thereby avoiding the problem of hyperprolactinemia, common with the standard antipsychotics and some atypical antipsychotics. Because of these properties, quetiapine is an effective antipsychotic agent with a relatively benign side effect profile. Patients on long-term treatment report high compliance, good satisfaction, increased ability to function and improvements consistent with a better quality of life. Because of quetiapine excellent tolerability profile, its use is particularly appropriate in patients especially sensitive to adverse effects, e.g., elderly patients with psychotic symptoms and other neurological disorders such as Parkinson's and Alzheimer's disease.

Quetiapine fumarate is well absorbed and extensively metabolized following oral administration. The half life is only 6h. Quetiapine fumarate is approximately 83% bound to plasma proteins. A most common side effect of quetiapine fumarate is sedation. The common side effects are constipation, headache, dry mouth and mild weight gain or weight loss. The less common side effects are dizziness, upset stomach, abnormal liver tests, substantial weight gain or weight loss, increased paranoia and a stuffy nose

Table 1: Formulation of Sustained released Quetiapine Fumarate tablet

Ingredient (mg Per Tablet)	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**
Quetiapine fumarate	345.6	345.6	345.6	345.6	345.6	345.6	345.6	345.6
Microcrystalline cellulose	74	74	74	79	79	80	80	80
Colloidal silicon dioxide	13	13	13	13	13	13	13	13
H.P.M.C.K100M	76.542	76.532	78.957	78.957	80.120	80.120	80.120	80.120
H.P.M.C.K4M	32	32	34	34	36	36	26	26
P.V.P.K.30	9.38	9.38	14.29	14.29	15.75	15.75	15.75	18.54
Methyl Paraben	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
Talcum	5.730	5.730	8.08	8.08	8.07	8.07	8.07	8.07
Magnesium Stearate	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08
Cross carmellosesodium	68	68	68	70	74	74	74	74
Iso propyl alcohol	Q.S.	Q.S	Q.S.	Q.S	Q.S.	Q.S	Q.S.	Q.S.

2. Materials and Methods

2.1 Materials

Quetiapine Fumarate was obtained by (Nifty labs PVT LTD India), Hydroxypropyl methylcellulose and Iso propyl alcohol by (Lucid Colloids Ltd India), PVP K30 by (Colorcon Asia Pvt ltd) and Magnesium Stearate by (Signet Chemical Corporation Mumbai), Cross Carmellose sodium by (Anamaga pharma chem. Pvt ltd), Colloidal silicon dioxide by (Shandong head co ltd).

2.2 Methods

1. Tablet Thickness

Thickness of tablets is important for uniformity of tablet size .thickness can be measured using digital vernier calipers. Five tablets from each batch are used, and average value calculated.

2. Weight variation test

To study weight variation, 20 tablets of each formulation were weighed using an electronic balance, and the average weight was determined for each formulation. Test was performed according to the official method. Not more than two of the individuals'

3. Tablet Hardness

The resistance of tablets to shipping or breakage, under condition of storage, transportation and handling before usage depends on its hardness. For each formulation, the hardness of 6 tablets was determined using the Monsanto hardness tester (cadmach).

4. Friability

Friability is the measure of tablet strength. Roche Friabilator is used for testing the friability. Normally preweighed 20 tablets were placed in the plastic chamber of friabilator. This was then operated for 100 revolutions. Tablets dropping from a distance of six inches with each revolution. Tablets are then dusted and reweighed.

5. Uniformity of drug content

The drug content of the tablet was determined according to in house standards and it meets the requirements if the amount of the active ingredient in each of the 10 tested tablets lies within the range of 90 to 110 % the standard amount. Ten tablets were weighed and taken in to mortar and crushed in to fine powder . An accurately weighed Portion of the powder equivalent to about 100 mg of Quetiapine Fumarate transformed to a 100 ml of volumetric flask then dilute and dissolve with 100 ml of water then 1 ml was taken and dilute to 100 ml and absorbance was measured against blank at 289 nm.

6. Dissolution test

Dissolution parameters:

Medium - 900 ml, 0.1N HCl, Phosphate Buffer pH 6.8
Apparatus - Paddle
R.P.M. - 50
Temperature - 37 ± 0.5^0 C
Time - 1, 2, 4, 8, 12,14 hr

7. Model dependent methods

Model dependent methods are based on different mathematical functions, which describe the dissolution profile. Once a suitable function has been selected, the dissolution profiles are evaluated depending on the derived model parameters.

The model dependent approaches included

(1) Zero order model
(2) First order model
(3) Higuchi model
(4) Korsmeyer-Peppas model

(1) Zero-order model

Drug dissolution from dosage forms that do not disaggregate and release the drug slowly can be represented by the equation:

$$Q_0 - Q_t = K_0 t \quad (1)$$

Rearrangement of equation (1) yields:

$$Qt = Q_0 + K_0 t \quad (2)$$

where Q_t is the amount of drug dissolved in time t,
Q_0 is the initial amount of drug in the solution (most times, $Q_0 = 0$)
K_0 is the zero order release constant expressed in units of concentration/time.

(2) First order model

This model has also been used to describe absorption and/or elimination of some drugs although it is difficult to conceptualize this mechanism on a theoretical basis. The release of the drug which followed first order kinetics can be expressed by the equation:

$$dC/dt = -kc. \quad (3)$$

Equation (5) can be expressed as:

$$Log\ C = log\ C0 - Kt / 2.303 \quad (4)$$

Where **C0** is the initial concentration of drug,
K is the first order rate constant,
T is the time. The data obtained are plotted as log cumulative percent- age of drug remaining vs. time which would yield a straight line with a slope of - K/2.303.

(3) Higuchi model

Higuchi was the first to derive an equation to describe the release of a drug from an insoluble matrix as the square root of a time-dependent process based on Fickian diffusion**.**

$$Qt = [2\ DS\varepsilon\ (\ A - 0.5\ S\varepsilon)]\ 0.5 \times t0.5$$ Simplifying,

$$Qt = kH\ (t)^{0.5}$$

Where**, Qt** is the amount of drug released in time t,
D is the diffusion coefficient,
S is the solubility of drug in the dissolution medium,
ε is the porosity,
A is the drug content per cubic centimeter of matrix tablet,
KH is the release rate constant for the Higuchi model.
Second form of the Higuchi equation:

$$Q = [D\varepsilon/\tau\ (2A - \varepsilon C_s)\ C_s t]^{0.5}$$

Porosity, ε, is the fraction of matrix that exists as pores or channels into which the surrounding liquid can penetrate.
Tortuosity, τ, is introduced in equation to account for an increase in the path length of diffusion due to branching and bending of the pores, as compared to the shortest "straight-through" pores Tortuosity tends to reduce the amount of drug release in a given interval of time. A straight channel has a tortuosity of unity, and a channel through spherical beads of uniform size has a tortuosity of 2

(4) Korsmeyer-Peppas Model

Korsmeyer et al (1983) derived a simple relationship which described drug release from a polymeric system. To find

out the mechanism of drug release, first 60% drug release data was fitted in Korsmeyer–Peppas model:

$\mathbf{Mt/M \infty = Kt^n}$

Where

Mt / M ∞ is fraction of drug released at time t,

K is the rate constant and **n** is the release exponent.

7. Microbiological identification test

(1) Escherichia coli

Using casein soyabean digest broth (medium 1) as a diluent make 1 in 10 dilution of more than 1 gram of the product as mentioned. Under total aerobic viable count in microbial contamination in non sterile products and use 10 ml or the quantity corresponding to 1 gram or 1 ml of the product to inoculate a suitable amount of soyabean digest broth, incubate 30^0 to 35^0 for 18 to 24 hours. After incubation shake the broth and transfer 1 ml to 100 ml of Macconkey broth (Medium) incubate at 42^0 to 44^0 For 24 to 48 hours. Subculture on a plate of Macconkey agar (Medium8) and incubate at 30^0 to 35^0 for 18 to 72 hours. Growth of pink, nonmucoid colonies indicated the possible presence of Escherichia coli. No growth of such type of colonies, or the identification tests are negative it's indicate absence of e.coli and the products passes the test.

(2) Salmonella

Prepare a sample from the product. Total aerobic viable count in microbial contamination in nonsterile products and use the quantry corresponding to 10 gram or 10 ml of the products to inoculate a suitable amount of casein soyabean digest broth incubate at 30^0 to 35^0 for 18 to 24 hours. After incubation shake the broth and transfer 0.1 mi to 10 ml of rappapart vassilicides salmonella enrichment broth (medium 9) and incubate at 30^0 to 35^0 for 24 to 48 hours. Subculture on a plate of Wilson and Blair's BBS agar (medium 10) and incubate 30^0 to 35^0 for 24 to 48 hours. Green colonies with black centre develop and in 48 hour the colonies become uniformity black. Colonies surround by a dark jone and metallic seen indicates possibility presence of salmonella. If subcultured on plates of xylose, lysine deoxy cholate agar and incubated at 30^0 to 35^0 for 24 to 48 hours. Well developed red colonies with or without black centers indicates possibility of salmonella. This should be confirmed by identification tests. Negative its indicates absence of salmonella and the product passes the test.

(3) Pseudomonas aeruginosa

Using casein soyabean digest broth as a diluent make 1 in 10 diluent of more than 1 gram of the product mentioned in total aerobic viable count under microbial contamination in nonsterile products and use 10 ml or the quantity corresponding to 1 gram or 1 ml of the product inoculate a suitable amount (determine as under validity of the test method) of casein soyabean digest broth incubate at 30^0 to 35^0 incubate for 18 to 24 hours. Subculture on a plate of Cetrimide agar (medium 13) and incubate at 30^0 to 35^0 for 18 to 24 hours. A greenish color colony indicates the possibility of presence of pseudomonas aeruginosa. This should be confirmed by identification test. If there is no growth of such types of colonies or identification tests are negative its indicates absence of *P.aeruginosa* and the product passes the test.

(4) Staphylococcus aureus

Using casein soyabean digest broth as a diluent make 1 in 10 diluent of more than 1 gram of the product mentioned in total aerobic viable count under microbial contamination in nonsterile products and use 10 ml or the quantity corresponding to 1 gram or 1 ml of the product inoculate a suitable amount (determine as under validity of the test method) of casein soyabean digest broth incubate at 30^0 to 35^0 incubate for 18 to 24 hours. Subculture on a plate of mannitol agar (medium 13) and incubate at 30^0 to 35^0 for 18 to 72 hours. Yellow or white colonies indicate the possibility of presence of S. aureus. This should be confirmed by identification tests. No growth of such type of colonies or the identification tests or negative its indicates absence of S.aureus and the products passes the test.

5.4 Stability Studies and Storage Condition: To check the effect of environmental condition or storage condition on formulation Optimized batch was kept in environmental stability chamber for accelerated stability condition at 40^0 C temperatures and 75 ± 5 % relative humidity. The samples were withdrawn at 1 month interval and evaluated for physical parameters, drug content and *in – vitro* drug release.

3. Results and Discussion

Optimized structure

The Present study was aimed at the formulation sustained release tablet of quetiapine fumarate. The key advantage of this drug is its specificity of action, high safety and excellent efficacy.

3.1 Organoleptic Properties

Quetiapine Fumarate raw material has been tested as per in house specification and the results are listed in table

Table: 2

Result of Organoleptic Properties of quetiapine fumarate	
properties	**Results**
Description	Amorphous
Taste	Bitter
Odor	Odorless
Color	White

3.2 Loss of Drying

I.P. according loss on drying **not more than 0.5.**

Quetiapine fumarate was found loss on drying = 0.3066877

3.3 Sulphated ash:

I.P. According Sulphated ash not **more than 0.1 %.**

Quetiapine fumarate was found Sulphated ash – 0.0599

3.4 Melting point test:

Quetiapine fumarate was found melting point -175

3.5 Solubility test

Table 3: Observation of Solubility

Solvents	Degree of Solubility
Water	Slightly Soluble
0.1N HCL	Soluble
pH 4.5 acetate buffer	Slightly Soluble
6.8 pH Phosphate buffer	Slightly Soluble
pH 7.4 phosphate buffer	Slightly Soluble

3.6 Identification test

FTIR Spectroscopy

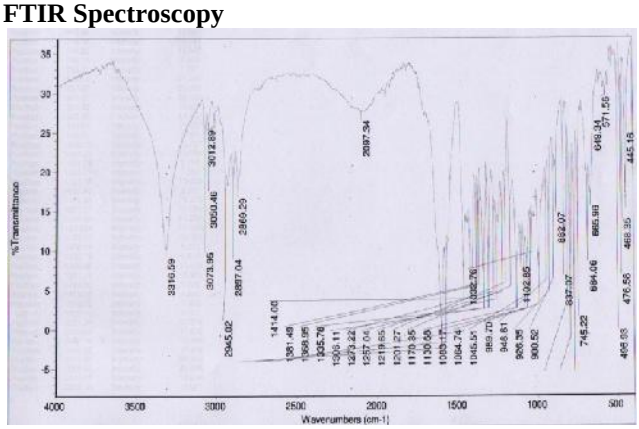

Figure 1: Standard I.R. Spectrum of Quetiapine Fumarate

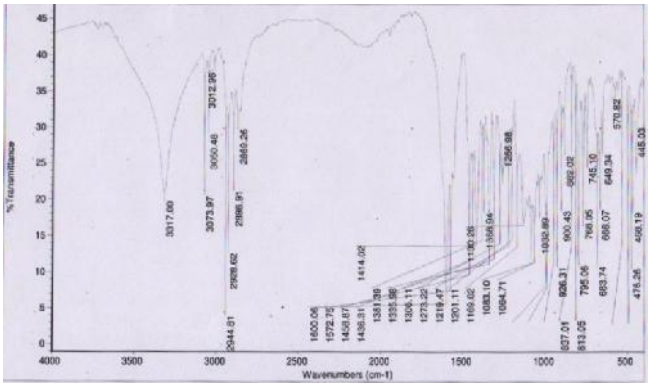

Figure 3: I.R. Spectrum of Quetiapine Fumarate (Master Formula)

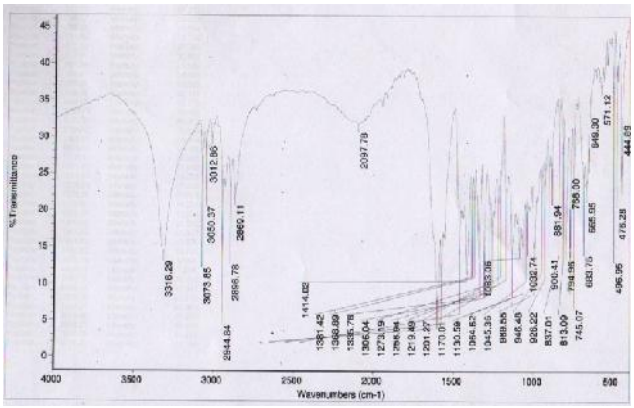

Figure 2: I.R. Spectrum of Quetiapine Fumarate

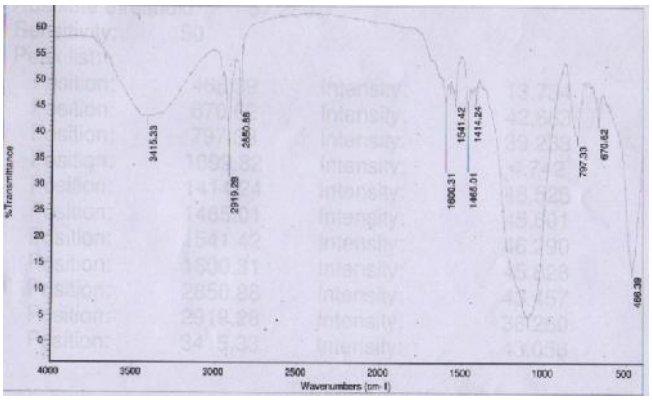

Figure 4: I.R. Spectrum of Quetiapine Fumarate (Ratio (1:1)

Peak of Functional Groups Observed in I.R. Spectra of Compatibility Studies

Table no. 4

Sr.No.	I.R. Spectra	Peak of Functional Group [Wavelength (cm^{-1})
(1)	OH GROUP	3700- 3500
(2)	Ether group	1150- 1070
(3)	Acetic group	3300- 2500
(4)	Ketone group	3300- 2500
(5)	C-H Bond from	1000-650
(6)	C-H rock methyl from	1370-1350

Table 5: Absorbance against Different Concentrations in pH 1.2 acidic buffer

Sr.No	Concentration (µg/ml)	Absorbance
1	0	0
2	2	0.06
3	4	0.13
4	6	0.174
5	8	0.210
6	10	0.322
7	12	0.375
8	14	0.422
9	16	0.472
10	18	0.515
11	20	0.627

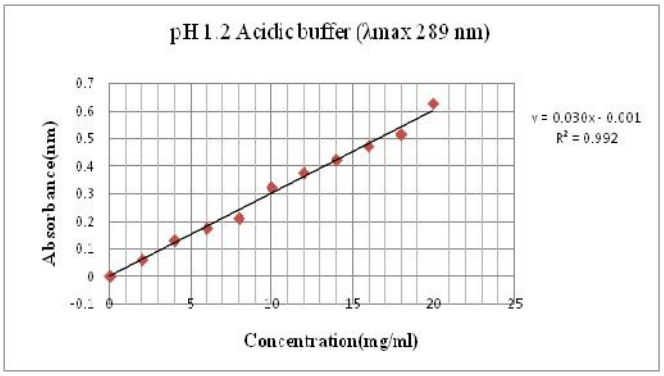

Figure 5: Standard calibration curve of Quetiapine fumarate in pH 1.2 acidic buffer

Table 6: Standard calibration curve of Quetiapine fumarate in Phosphate buffer 6.8

Sr.No	Concentration (µg/ ml)	Absorbance (At 289 nm)
1	0	0
2	2	0.08
3	4	0.119
4	6	0.18
5	8	0.210
6	10	0.320
7	12	0.416
8	14	0.435
9	16	0.489
10	18	0.534
11	20	0.624

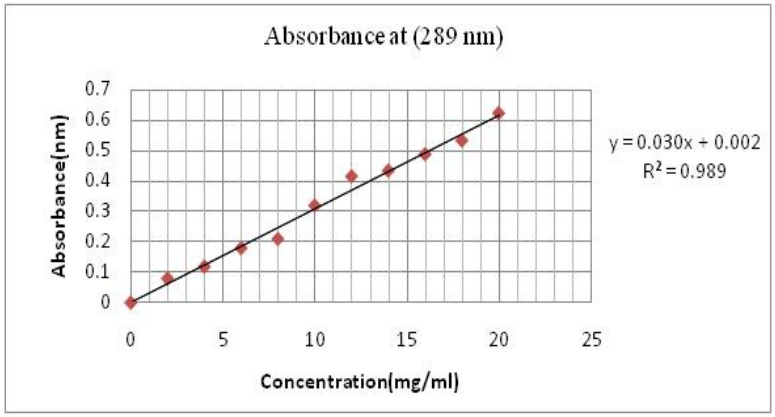

Figure 7: Standard calibration curve of Quetiapine fumarate in phosphate buffer pH .6.8

Table 7: Pre compression evaluation of sustained released tablets of Quetiapine fumarate

Formulation	Bulk Density (gm/cm^3)	Tapped Density (gm/cm^3)	Carr's Index	Hausner Ratio	Angle of repose (θ)
F_1	0.569±0.004	0.640±0.006	11.09	1.12	27.45
F_2	0.564±0.003	0.641±0.015	12.01	1.13	28.32
F_3	0.566±0.002	0.638±0.011	11.28	1.12	27.64
F_4	0.574±0.005	0.656±0.006	14.28	1.14	28.53
F_5	0.585±0.003	0.649±0.003	9.861	1.10	25.86
F_6	0.579±0.002	0.648±0.003	10.64	1.12	29.72
F_7	0.578±0.003	0.642±0.004	11.07	1.11	27.22
F_8	0.548±0.006	0.644±0.002	14.90	1.17	25.56

Table 8: Post compression evaluation of sustained release tablet of Quetiapine fumarate

Formulation	Shape	Colour	Average Weight of 20 Tablets (mg)	Thickness	Hardness	Friability (%)	% Drug Content
F_1	Round	White	670.4	6.7	5.98	0.237	99.369
F_2	Round	White	674.1	6.9	5.23	0.546	98.649
F_3	Round	White	675.5	6.0	5.67	0.124	99.194
F_4	Round	White	678.5	6.1	6.21	0.453	99.182
F_5	Round	White	675.6	6.2	5.34	0.661	99.468
F_6	Round	White	678.2	6.1	6.41	0.542	99.640
F_7	Round	White	674.4	6.3	6.84	0.432	99.550
F_8	Round	White	677.3	6.6	6.26	0.456	99.598

Table 9: % Table 9% Cumulative Drug release F_7 -14 hrs- 99.62

S.No	Time (hrs)	% Cumulative Drug release							
		F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8
1	0	0	0	0	0	0	0	**0**	0
2	1	1.21	4.1	5.42	3.42	2.02	1.52	**6.49**	2.44
3	2	2.52	8.6	16.56	5.63	4.12	2.12	**10.62**	7.48
4	3	5.44	12.6	22.58	12.41	6.54	5.21	**18.26**	18.84
5	4	12.24	20.9	27.34	18.82	9.73	8.86	**26.64**	24.26
6	5	18.92	25.34	34.82	25.08	16.39	20.89	**38.53**	39.12
7	6	20.62	29.45	38.81	31.61	24.88	25.66	**48.56**	42.21
8	7	28.25	38.64	48.29	38.72	28.52	35.45	**58.35**	54.45
9	8	32.49	46.32	56.61	49.18	36.92	45.62	**69.26**	64.28
10	9	42.83	58.45	68.66	63.59	40.78	52.21	**71.46**	70.62
11	10	52.62	66.54	74.84	70.68	50.32	58.42	**78.43**	78.42
12	12	65.75	75.32	88.38	76.37	68.83	72.72	**89.19**	82.51
13	14	78.64	81.68	94.41	85.42	78.56	84.51	**96.84**	90.71

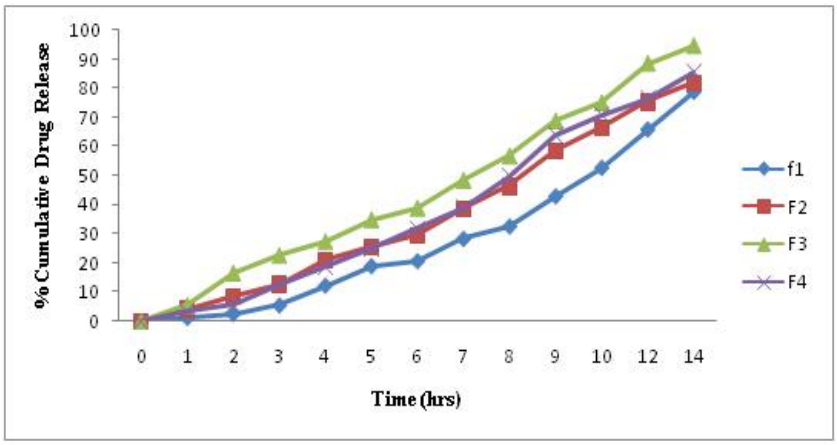

Figure 7: Dissolution study of Quetiapine Fumarate (F_1 to F_4)

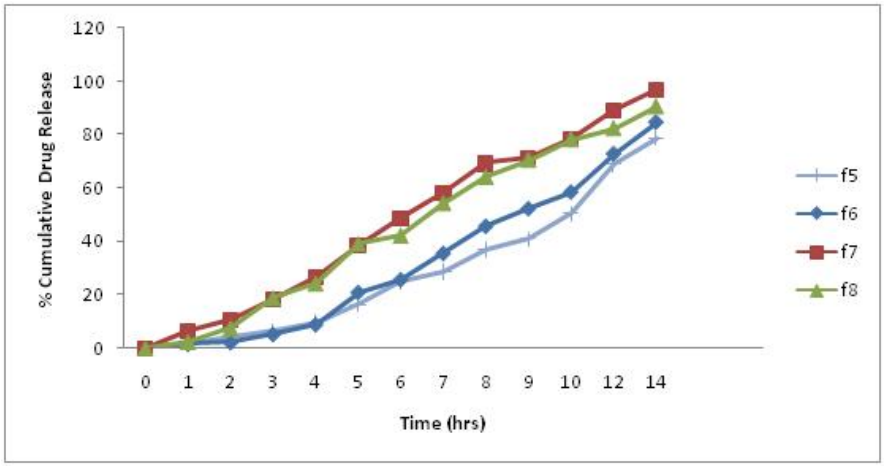

Figure 8: Dissolution study of quetiapine fumarate (F_5 to F_8)

Table 10: Comparison of the slope and the regression co-efficient for different models for optimized formulation F7

Time (hrs)	SQRT (Square root)	Log Time	%CDR	Log% CDR	%Drug Retained (100 -%CDR)	Log% Drug Retained	%Drug Retained$^{1/3}$
0	0	0	0	0	0	0	0
1	1	0	6.49	0.812	93.51	1.9708	4.5389
2	1.41	0.3010	10.62	1.026	89.38	1.9512	4.4710
3	1.73	0.4771	18.26	1.261	81.74	1.9124	4.3398
4	2.00	0.6020	26.64	1.425	73.36	1.8654	4.1861
6	2.44	0.7781	48.56	1.686	51.44	1.7113	3.7190
7	2.64	0.8450	58.35	1.766	41.65	1.6196	3.4663
8	2.82	0.9030	69.26	1.840	30.74	1.4877	3.1325
9	3.00	0.9542	71.46	1.854	28.54	1.4554	3.0559
10	3.16	1.0000	78.43	1.894	21.57	1.3338	2.7836
12	3.46	1.0791	89.19	1.953	10.81	1.0338	2.2111

Table 11: Model fitting of release Profile of formulated tablets using Different Models

Formulation	Zero order	First order	Higuchi	Hixsen crowell	Korsemeyer peppas	Best Fit model
F_1	0.964	0.897	0.945	0.936	0.993	Korsemeyer peppas
F_2	0.952	0.838	0.889	0.884	0.921	Zero order
F_3	0.962	0.795	0.910	0.869	0.969	Korsemeyer peppas
F_4	0.961	0.869	0.897	0.907	0.984	Korsemeyer peppas
F_5	0.915	0.795	0.827	0.840	0.981	Korsemeyer peppas
F_6	0.955	0.863	0.876	0.902	0.973	Korsemeyer peppas
F_7	0.986	0.957	0.904	0.985	0.987	Korsemeyer peppas
F_8	0.994	0.941	0.970	0.971	0.841	Zero order

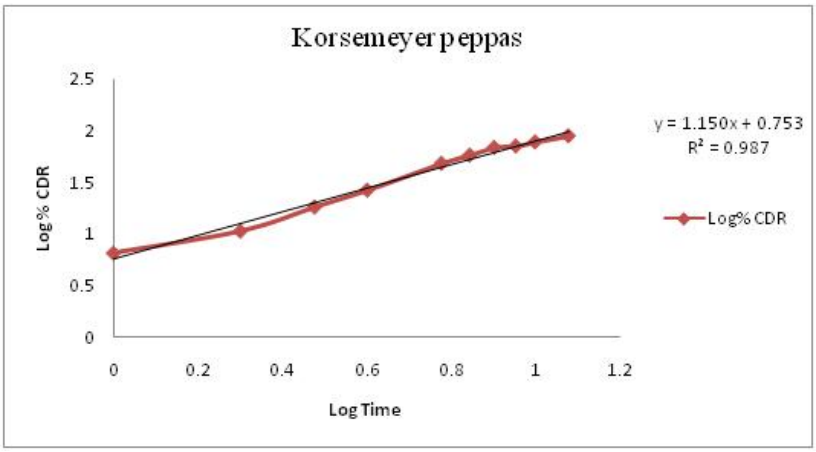

Figure 9: *In-vitro* release profile of Quetiapine fumarate from in phosphate buffer, pH 6.8 for Korsemeyer peppas for optimized formulation F7

Table 12: Result of microbiological test

S.No	Test	Result
1	**Escherichia coli**	Not Found
2	Salmonella	Not Found
3	Pseudomonas aeruginosa	Not Found
4	Staphylococcus aureus	Not Found

Stability Studies
Evaluation parameter of stability batch

Table 13: Stability Studies data of F7 Formulation during stability studies at $30^0 \pm 2^0$C and 60±5% RH

Formulation Code	Evaluation Parameter				
	Duration of Period (Months)	hardness	friability	Wt variation	Drug content
QFSRT / 07	1	6.84	0.432	674.4	99.550

% CDR of stability batch

Table 14: *In – vitro* release profile of F7 during stability studies at 300±20C and 60±5% RH for one month

Time (Hr)	Cumulative % Drug release	
	Initial	(After 1 month)
0	0	0.0
1	6.49	8.72
2	10.62	12.27
3	18.26	20.42
4	26.64	32.41
5	38.53	40.68
6	48.56	52.46
7	58.35	63.51
8	69.26	72.84
9	71.46	74.36
10	78.43	84.71
12	89.19	92.48
14	96.84	98.26

4. Conclusion

The aim of dissertation entitled Formulation development and evaluation of sustained release Quetiapine tablet was to formulate a stable, safe and convenience dosage form, which is most suitable according all evaluation parameters.

- Quetiapine fumarate is antipsychotic drug used in Psychosis and also treatment of mood, depression.

- IR it was concluded curve was drawn with 0.1 N HCL and 6.8 phosphate buffer, and it show maximum wave length in 289 nm.
- From compatibility studies it was proved that there was no interaction between drug and excipients.
- In present study is to prepare twice a day Sustained Release Quetiapine fumarate tablet with the help of wet granulation technology.
- H.P.M.C.K 100 M, H.P.M.C.K4, P.V.P.K. - 30 used binder agent. And Cross Carmellose sodium used super disintegration agent.
- Colloidal silicone dioxide used tablet moisture adsorber and Glidant, Talcum used Glidant, and Magnesium Stearate used lubricant in tablet.
- Evaluation of pre compression parameter of angle of repose, bulk density, tapped density, Carr's index, Hausner ratio.
- Evaluation of post compression parameter colour, shape, thickness, friability, hardness, weight variation.
- The release rates of formulated tablets were performed up to 14 hrs.
- The microbial limit for nonsterile products must be within an acceptable range that does not pose health hazards to intended patient groups or diminished product stability.
- Comparable release profile of F7 after 1 month indicates stability of the formulation.

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