FORMULATION AND EVALUATION OF SUBLINGUAL TABLET OF OLANZAPINE

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Abstract
The aim of the present research was to formulate and evaluate sublingual tablet of Olanzapine by reducing first pass ratio, increasing bioavailability and improve patient compliance, belonging to the class of thienobenzodiazepine, atypical anti-psychotics drug which is a first line psychiatrics treatment for schizophrenia. The sublingual tablets were prepared by direct compression method using different superdisintegrant like Croscarmellose Sodium, Crospovidone, and Sodium starch glycolate in different ratio. The pre-compression parameters of powder and post-compression parameters of prepared sublingual tablets were evaluated. Post-compression parameters like appearance, weight variation, Hardness, thickness, friability, drug content, disintegration time, wetting time, water absorption ratio, in-vitro dispersion time and *in-vitro* drug release studies. It was observed that post-compression parameters like weight variation, Hardness, friability and drug content was found within the Standard limits as per described in I.P. The formulation F6 with 5% crospovidone as superdisntegrant showed faster disintegration time of 24.1±0.37 sec and lower the wetting time of 27.3±0.47 sec i.e lower the wetting time, quicker the disintegration time. It was observed that concentration of superdisintegrant has significant effect on the disintegration time of olanzapine tablet formulation. Higher the concentration of superdisintegrant used, the shorter the time required for the tablet to disintegrate. *In-vitro* drug release studies were performed by using pH 6.8 phosphate buffer used as a dissolution medium, F6 showed 95.36% drug release within the time interval of 15 min. The release kinetic study revealed that formulation F6 showed fickian release of mechanism and showed first order kinetic. Formulation F6 showed the best result as the disintegration time required was less as compared to other formulation. Thus, it was concluded that this study can be beneficial for the formulation of sublingual tablets of olanzapine and was successfully formulated by adding different type of superdisintegrants with improved patient compliance and bioavailability of the drug which bypasses the hepatic metabolism.

Key words: **Anti-psychotic, Schizophrenia, Sublingual, Olanzapine**

I. INTRODUCION:

Now a day, delivering of active ingredients with a level of comfort, presentation and bioavailability and these studies is infringement the difficulty of conventional method. Various factors are examined like choice of excipients, bioavailability, stability and cost effectiveness. (Aghera *et.al,* 2012)

In recent times, there was an interest for using the oral cavity through sublingual mucosa for impart drugs directly into the systemic circulation (Nibha *et.al,* 2012).In dosage forms, the oral route is the most perfect route of administration, due to its advantages like ease of administration, suitable dosing, self-medication, no pain and patient compliance. Tablets and capsules are the foremost accepted dosage forms and the disadvantage is dysphagia which means difficulty in swallowing. (Thulluru *et.al,* 2017)

Dysphagia is a common concern of all age groups, especially elderly, children and psychotic patients. It observes difficulties in the population to swallowing these solid dosage forms and it don't improve the patient compliance (Dev *et.al,* 2016). In sublingual route, drug impart within the oral cavity by means of the mucus membrane. Sublingual route is a common route of administration of drug due to the rich blood supply, extreme permeability and improves the patient compliance. (Nibha *et.al,* 2012).

Sublingual 'under the tongue' refers the route of administration in which reliable medications entered directly into the systemic circulation (Yadav and panwar, 2015) and this route may be rapid onset of action than orally administrated tablet and have excessive advantages over oral administration i.e sublingually enter a medication into the body and the medication will come in contact with the enzymes in saliva earlier to entry into the bloodstream(Yadav and Panwar, 2015) and quantity immersed through blood vessels and avoids the first-pass effect.(Kumar *et.al,* 2014)

Sublingual route can give an alternative route of administration and these sublingual formulations are valuable to pediatrics, geriatric and psychotic patients. (Aghera *et.al,* 2012)

Objectives of systemic sublingual drug delivery

- Raise patient compliance

- Raise the bioavailability of drug
- Side effect is reduced.
- Avoids the hepatic first pass metabolism
- Viable, capable drug delivery in the oral cavity through the oral mucosa membrane (Dev *et.al*, 2016).

Olanzapine is an atypical antipsychotic drug that belongs to the thienobenzodiazepine category, approved by the Food and Drug Administration (FDA) (fda gov., 2018) for the treatment of pyschotic disorder particularly schizophrenia and it is a first line psychiatrics, it is more effective and helpful in treating schizophrenic patients with minimal side effect. It is well absorbed but rapidly metabolized by first-pass effect, resulting in 60% bioavailability. It has low bioavailability so to increase bioavailability we can formulate it as sublingual tablet. (Littrell and Littrell, 1997)

Various techniques can be used to formulate sublingual tablets .Direct compression is one of the best method to increase the patient compliance and has fast disintegration. No need of water is required in the formulation of sublingual tablets. The choice of superdisintegrant in tablet for preparing the formulation and amount is vital for achieving a fast disintegration and dissolution rate. It is easy, cheaper and cost-effective method. (Dhangar *et.al,* 2017)

II. MATERIALS AND METHODS

Material
Olanzapine was procured as a gift sample from the Ranbaxy Ltd. and also Mannitol, Microcrystaline cellulose, Crospovidone, Croscarmellose Sodium,Sodium Starch Glycolate, Aspartame, vanilla Flavor. All the chemicals and solvents used were of analytical grade and used as supplied by the manufacturer.

Experimental method
Sublingual tablets containing 10mg olanzapine were prepared by direct compression method by using different type of superdisintegrants in different ratio. All ingredients such as Mannitol, Microcrystalline cellulose, aspartame (Sweetener), Vanilla (flavor), Superdisintegrant like croscarmellose, crospovidone and sodium starch glycolate were mixed in geometrical order in mortar and pestle and then all the ingredients passed through an 80# mesh sieve except talc. After sieve, talc was added and mixed thoroughly and compressed into tablets by using rotary tablet compression machine with 6mm tooling punches and composition table shown in table 1.

III. PREFORMULATION STUDIES:

a. Organoleptic properties- The procured drug sample as olanzapine was identified by organoleptic properties like color, odor of the Olanzapine and it was characterized and recorded. (Pubchem., 2018)

b. Melting point determination: Melting point of drug was done by Capillary method. (Chem., 2018)

c. U.V spectroscopy of drug:

A. Preparation of Calibration curve of Olanzapine in Phosphate 6.8 buffer

- **Standard solution**
  50 mg of Olanzapine was accurately weighed and dissolved in50ml of Phosphate 6.8 buffer to obtain a concentration of 1000 µg/ml.
- **Stock solution**
  From this solution the stock solution was prepared by taking 10ml from standard solution and diluted to 100ml to obtain a concentration of 100µg/ml. Then prepare the solution of 5-25µg/ml and absorbance was measured at 250nm.

d. FTIR- The drug sample(Olanzapine) was determined by FTIR spectroscopy . The drug was finely stuck and uniform with approximately 100mg of dry KBr powder. Grinding and mixing can be done with mortar and pestle. The dried mixture of drug and KBr is then pressed into a transparent disk in an evacuable die at adequate high pressure. KBr pellets can frequently be made using a simpler device such as a hydraulic press. Then, the spectrum of dried mixture of drug and KBr was scanned from 2000cm -1 to 400 cm -1. (Pavia *et.al,* 2015)

IV. EVALUATION OF PRE-COMPRESSION CHARACTERISTICS OF POWDER

a. Angle of repose
It is calculated by the fixed funnel method and expressed by θ. It is the maximum angle that can be applied between the surface of a powder heap and horizontal plane and evaluate the flowability of powder. (Shah *et.al,* 2017)

By using funnel, the powder was permit to flow and to form a cone. Stop flowing the material when the pile reached a predetermined height. Then the equation is (Sah *et.al,* 2016)

$$\tan\theta = 2h/Dt$$

$$D = 2r$$

$$\tan\theta = h/r$$

H=height of pile r=radius of pile

b. Bulk density

Bulk density was determined by taking a known mass of powder in a 50 ml graduated measuring cylinder which is attached to the bulk density apparatus and bulk density was calculated by following formula (Sah *et.al,* 2016)

Bulk density= weight of powder in gm/ bulk vol. of powder

c. Tapped density:

Tapped density was determined by tapping method using measuring cylinder containing weighed amount of powder. The cylinder was dropped 3 times from a height of 1 inch at an interval of 2 sec and tapped density was calculated by following formula (Sah *et.al,* 2016)

Tapped density= mass of powder /vol. of powder after tapping

d. Carr's compressibility Index:

In this, the powder has the ability to decrease the volume under pressure (Shah *et.al,* 2017).The Carr's compressibility Index of powder was calculated from Bulk density and tapped density of the blend (Sah *et.al,* 2016)

%compressibility index=Tapped density-Bulk density/tapped x 100

e. Hausner ratio

In this parameter, influence the mass of uniformity of the dose and it was calculated by tapped and bulk density. (Shah *et.al,* 2017)

Hausner ratio=Tapped density/bulk density

V. EVALUATION OF POST-COMPRESSION CHARACTERISTICS OF SUBLINGUAL TABLET

a. General appearance

In this parameter, visual examination is vital for customer approval, lot-to-lot stability and tablet uniformity. Tablet's size, shape, color, and odor control the general appearance of a tablet which includes the measurement of a bulk of aspects. (Lachman and Lieberman, 1976)

b. Weight variation

According to IP 20 tablets were weighed individually and calculate the average weight. (Jaiswani *et.al,* 2014)

c. Thickness

Tablet thickness is an important parameter in which 6 tablets were taken and then thickness was evaluated by Vernier caliper. (Nibha and Pancholi, 2012)

5.6.4 Hardness

In this, 3 tablets were chosen from each formulation and it was kept between the 2 plungers of the hardness tester and creates a pressure which is essential for breaking a tablet in a diametric way and was measured by various testers (Nibha and Pancholi, 2012)

- Monsanto
- Pfizer
- Scheuniger
- Strong-Cob (Dhangar *et.al,* 2017)

d. Friability

6 tablets were selected from each formulation and placed in a friabilitor. It was determined by Roche friabilator. Firstly weighs a tablet and then tablet were placed in the fribilator and then revolves at 25 RPM (100 revolution), declining those tablets at a distance of 6 inches with each revolution and were rotated in the friabalator at least 4 minutes. Then reweighed the tablets and is expressed in percentage as (Jaiswani *et.al,* 2014)

%Friability = Initial weight-final weight/final weight x 100

e. Disintegration time

Time could be calculated by disintegration apparatus with pH 6.8 Phosphate buffer used as a medium and maintained the temperature at 37±2°C. One tablet has to be placed in the tube of the basket. The time taken for complete disintegration of the tablet with no flagrant mass left behind in the apparatus was measured in seconds. (Singh et.al, 2012)

f. Wetting time

In the wetting test, a piece of tissue paper folded two times and placed in a petridish containing 6ml of water. One tablet was placed in a petri dish and the time vital to cover the complete tablet surface and recorded as the wetting time. (Singh et.al, 2012)

g. Water Absorption Ratio(R)

In a tissue paper, one tablet was placed and permitted to completely wet. Then weighed the wetted tablet, Water absorption ratio was determined using the following equation (Nibha and Pancholi, 2012)

$$R = 100 \times Wa - Wb/Wa$$

Where, Wa = Weight of tablet after wet
Wb = Weight of tablet before wet

h. *In-vitro* dispersion time

Tablet was added to 10ml of pH 6.8 phosphate buffer solution and time essential for complete dispersion was measured in seconds. (Battu et.al, 2007)

i. Drug Content

10 tablets were selected from each formulation, then triturate in mortar pestal and form a powder. The powder equivalent to 10 mg of drug was accurately weighed and added into 100 ml volumetric flasks and to this ethanol was added in 100ml volumetric flask, stirred 30min and then sonicated. The volume was made up to the mark with a solution and filtered through whatsman filter paper. 10ml of the filtrate was diluted with pH 6.8 Phosphate buffer and makeup the volume upto 100ml and then 1ml of the solution was diluted with 6.8 Phosphate buffer and makeup the volume upto 10ml. Then drug content was estimated by double beam UV-visible spectrophotometer at 250nm. (Singh *et.al*, 2015)

j. *In-vitro* drug release study

This *in-vitro* drug release study is vital for tablets and according to USP, it verify the acceptance with the dissolution condition for solid dosage form

By using USP dissolution testing apparatus type II (Paddle method) the *in-vitro* drug release of sublingual tablets was accepted by using 900 ml of pH 6.8 phosphate buffer at 50 RPM and maintains the temperature at 37 ± 0.5 ºC. A sample (5 ml) of the solution was withdrawn from the dissolution apparatus at 2, 4, 6, 8, 10, 15 min. The samples were replaced with fresh dissolution medium and then absorbance was analyzed by a UV spectrophotometer at 250nm and release kinetic study was estimated by kinetic models like Zero order, First order, Higuchi plot and korsmeyer and peppas plot. (Patel et.al, 2013)

VI. RESULT AND DISCUSSION

Olanzapine was identified by using Preformulation studies like Organoleptic properties include color and odor and it was found to be solid yellow color crystalline powder and result was shown in table 2, Melting point was found to be 190-192°C and result was shown in table 3, Preparation of calibration curve in Phosphate 6.8 buffer by U.V spectroscopy and result was shown in table 4 and FTIR of Olanzapine and interpretation was shown in table 5.

The powder was evaluated for Pre-compression parameters like Angle of repose, Carr's index, Hausner ratio, Bulk density and Tapped density and these parameters showed that powder has a good flow property and the values were found to be within the Standard limit for all formulations and the result was shown in table 6.

The Post-compression parameters like General appearance, Weight variation, Hardness, Thickness, friability, Disintegration time, wetting time, water absorption ratio, *In-vitro* dispersion time, Drug content and *In-vitro* dissolution studies was observed. In general appearance no variation in the color, size, shape and odor and all the tablets were yellow in color with small size and round shape. It was observed that the evaluation parameters like weight variation, Friability and Drug content was within the standard limit as per described in I.P. The weight variation was found to be in the range of 99.94±1.49 to 103±1.61mg, thickness was found to be in the range of 2.3±0.14 to 2.6±0.07mm, Hardness was found to be in the range of 2.5±0.04 kg/cm^{2}to 3±0.09 kg/cm^2, friability values of all the tablets were found to be within the limits less than 1% as per described in I.P, percentage drug content was found to be between 97.94 to 101.59% which was within the acceptable limit and the result was shown in table 7.

The disintegration time were found to be in the range of 24.1± 0.37 to 34±0.81 sec. It was observed that the better disintegration time in the formulation F6 with 5% w/w crospovidone as superdisintegrant showed faster disintegration time compared with that of other formulations i.e Higher the concentration of superdisintegrant used, the shorter the time required for the tablet to disintegrate, wetting time were found to be in the range of 27.3±0.47 to 37±0.57secs, water absorption ratio were found to be in

the range of 63%±0.006 to 75%±0.009, *in-vitro* dispersion time were found in the range of 26.5± 0.5 to 36±0.81 sec and result was shown in table 8.

In-vitro release study of Olanzapine sublingual tablet was observed that the formulation F6 containing Crospovidone was used as superdisintegrant showing 95.36% in 15minutes.Among the 3 superdisintegrant used, the drug release of crospovidone with 5% w/w has shown better drug release in 15minute and result was shown in table 9.

The model fitting analysis like zero order, first order and higuchi plot were done by comparing the coefficient of regression (R^2) values. Thus, the higher value of R^2 determines the best fit model of all 9 formulations and it was observed that first order kinetics is dominant for all nine formulations. The obtained value of 'n' from the korsmeyer and peppas plot was found to be in the range of less than 0.5 that signifies that the formulation follow the Fickian mechanism of release. All the 9 formulations showed fickian mechanism of release and result was shown in table 10.

Table 1: formulation of olanzapine sublingual tablet with different superdisintegrant

Ingredients (mg)	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**
Olanzapine	10	10	10	10	10	10	10	10	10
Mannitol	50	50	50	50	50	50	50	50	50
MCC	24	23	22	24	23	22	24	23	22
Croscarmellose sodium	3	4	5	-	-	-	-	-	-
Crospovidone	-	-		3	4	5	-	-	-
Sodium starch glycolate	-	-		-	-	-	3	4	5
Asparatame	5	5	5	5	5	5	5	5	5
Vanilla	3	3	3	3	3	3	3	3	3
Talc	5	5	5	5	5	5	5	5	5

Table 2: Result of organoleptic properties

S.no	**Properties**	**Result**
1	Description	Solid crystalline powder
2	Color	Yellow
3	Odor	Odorless

Table 3: Result of melting point

S. no	**Method**	**Experimental value**	**Reported value**
1	Capillary method	190-195°C	190-192 °C

Table 4: Calibration curve of olanzapine at 250nm in phosphate 6.8 buffer

Concentration	Absorbance
0	0
5	0.1812
10	0.4146
15	0.5534
20	0.8260
25	0.9954

Table 5: FTIR interpretion of Olanzapine

s. no	**Observed peak (cm^{-1})**	**Standard frequency range (cm^{-1})**	**Interpretation**
1	3222.15 cm^{-1}	3500-3100 cm^{-1}	N-H stretching
2	746.19 cm^{-1}	900-690 cm^{-1}	Aromatic ring(out of plane bend)
3	2933.28 cm^{-1}	3000-2850 cm^{-1}	C-H stretching
4	1143.6 cm^{-1}	1350-1000 cm^{-1}	C-N stretching
5	2933.28 cm^{-1}	2960-2850 cm^{-1}	CH_3 Alkane
6	3058.91 cm^{-1}	3100-3000 cm^{-1}	C=C Alkene

Table 6: Pre-compression Parameters

Formulation	**Angle of repose (θ)±S.D**	**Bulk density (gm/cm^2)±S.D**	**Tapped density (gm/cm^2)±S.D**	**Carr's index(%)±S.D**	**Hausner ratio(%)±S.D**
F1	25.52±0.39	0.412±0.0006	0.473±0.0006	12.8±0.25	1.14±0.005
F2	29.30±0.79	0.406±0.0007	0.469±0.0007	13.4±0.34	1.15±0.009
F3	27.56±0.36	0.418±0.0008	0.484±0.0005	13.6±0.32	1.15±0.006
F4	26.29±0.46	0.412±0.0005	0.470±0.0006	12.3±0.29	1.14±0.009
F5	27.21±0.62	0.426±0.0007	0.476±0.0005	10.5±0.24	1.11±0.007
F6	28.12±0.59	0.432±0.0006	0.494±0.0009	12.5±0.18	1.14±0.01
F7	25.38±0.58	0.418±0.0007	0.475±0.001	12±0.5	1.13±0.008
F8	29.01±0.50	0.410±0.0007	0.472±0.0008	13.1±0.16	1.15±0.005
F9	30.14±0.54	0.416±0.0008	0.483±0.001	13.8±0.12	1.16±0.006

Table 7: Post-compression parameter

Formulation	Weight variation (mg)±S.D	Thickness (mm)±S.D	Hardness (kg/cm^2)±S.D	Friability (%)	Drug content (%)
F1	101.92±0.95	2.4±0.21	2.8±0.23	0.46%	98.97%
F2	99.94± 1.49	2.6±0.07	2.5± 0.40	0.38%	101.59%
F3	102.7±1.38	2.4±0.1	3.0±0.09	0.42%	99.20%
F4	103 ± 1.61	2.3±0.14	2.6±0.12	0.36%	101.54%
F5	102.5± 1.00	2.4±0.13	2.5± 0.04	0.32%	100.95%
F6	102.78±1.53	2.6± 0.12	2.7± 0.20	0.31%	101.39%
F7	101.03± 1.13	2.5± 0.13	2.8± 0.23	0.39%	97.94%
F8	102.68± 1.28	2.3±0.22	3.0±0.04	0.36%	98.12%
F9	101.65±1.45	2.4±0.15	2.6±0.23	0.45%	99.17%

Table 8: Post-compression parameter

Formulation	Disintegration time (sec)±S.D	Wetting time (sec)±S.D	Water absorption ratio (%)±S,D	In-vitro dispersion (sec)±S.D
F1	30.1± 0.68	34.8± 0.68	64± 0.006	33± 0.81
F2	29± 0.57	32.6± 0.74	67± 0.008	31.6± 0.74
F3	27.3± 0.47	30.5± 0.76	71± 0.013	29.1± 0.68
F4	28.3± 0.47	31.3± 0.74	63± 0.006	30.8± 0.89
F5	25.5± 0.95	29.5± 0.5	66± 0.013	28.3± 0.74
F6	24.1± 0.37	27.3± 0.47	70± 0.013	26.5± 0.5

F7	34± 0.81	37± 0.57	68± 0.009	36± 0.81
F8	32.8± 0.68	35.5± 0.5	73± 0.011	34.3± 0.47
F9	31.5± 0.76	33.6± 0.74	75± 0.009	32.5± 0.76

Table 9: In-vitro drug release of olanzapine in phosphate buffer pH6.8 from tablets of F1 to F9

Time(min)	**% Cumulative drug release**								
	F1	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**
2	44.46%	50.35%	52.90%	54.26%	56.78%	59.25%	43.42%	46.13%	46.68%
4	62.60%	65.31%	64.68%	67.17%	68.76%	70.59%	60.69%	61.07%	63.40%
6	68.83%	71.60%	72.86%	75.38%	78.18%	80.88%	70.29%	71.79%	73.12%
8	76%	81.57%	82.55%	83.72%	85.36%	87.86%	74.66%	76.04%	76.23%
10	84%	86.91%	88.68%	89.42%	90.89%	92.17%	77.54%	81.31%	81.56%
15	90%	91.52%	92.07%	91.20%	93.02%	95.36%	85.10%	87.65%	88.69%

Table 10: Model fitting release profile of prepared Olanzapine sublingual tablet formulation F1-F9

Formulation	**Correlation Factor**			**Korsmeyer and Peppas(N)**	**Mechanism of release**	**Best fit model**
	Zero(R^2)	**First(R^2)**	**Higuchi(R^2)**			
F1	0.884	0.984	0.958	0.350	Fickian	First order
F2	0.874	0.975	0.952	0.306	Fickian	First order
F3	0.877	0.963	0.951	0.293	Fickian	First order
F4	0.838	0.928	0.925	0.274	Fickian	First order
F5	0.841	0.944	0.931	0.261	Fickian	First order
F6	0.845	0.975	0.934	0.251	Fickian	First order
F7	0.836	0.957	0.928	0.330	Fickian	First order
F8	0.864	0.976	0.949	0.322	Fickian	First order
F9	0.857	0.978	0.942	0.315	Fickian	First order

Figure 1: Calibration curve of olanzapine at 250nm in Phosphate 6.8 buffer

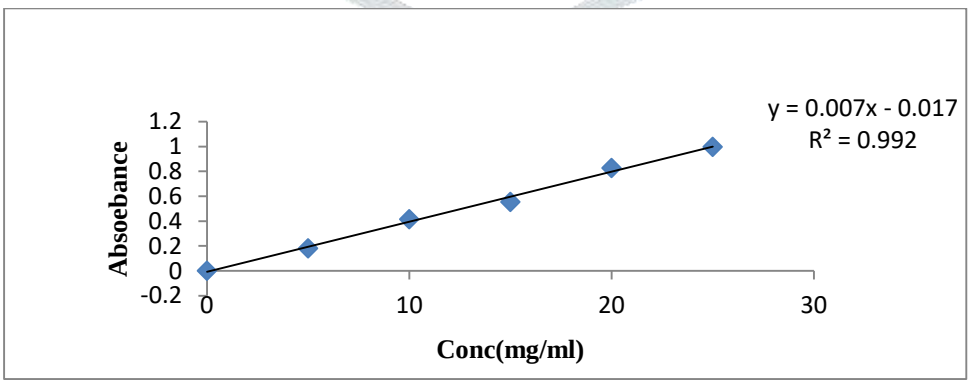


Figure 2: IR spectra of test Olanzapine

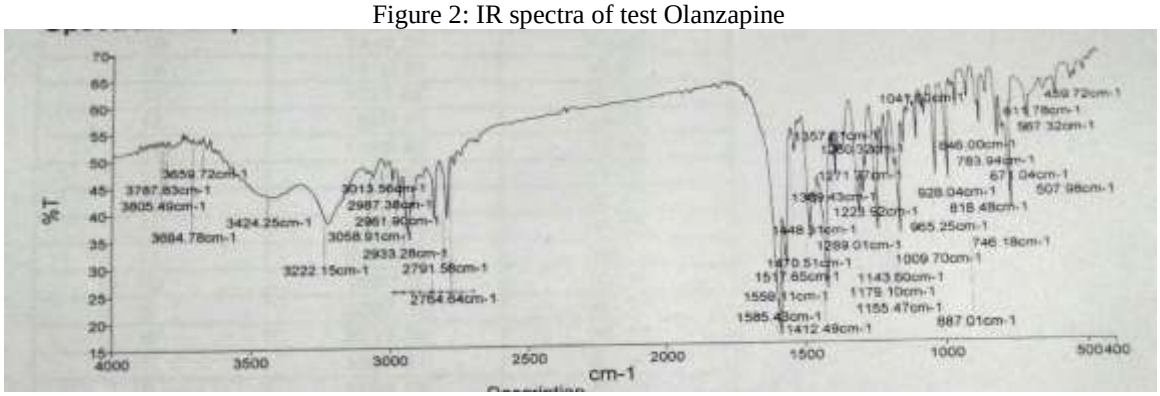


Figure 3: showing Drug content of different tablet formulations

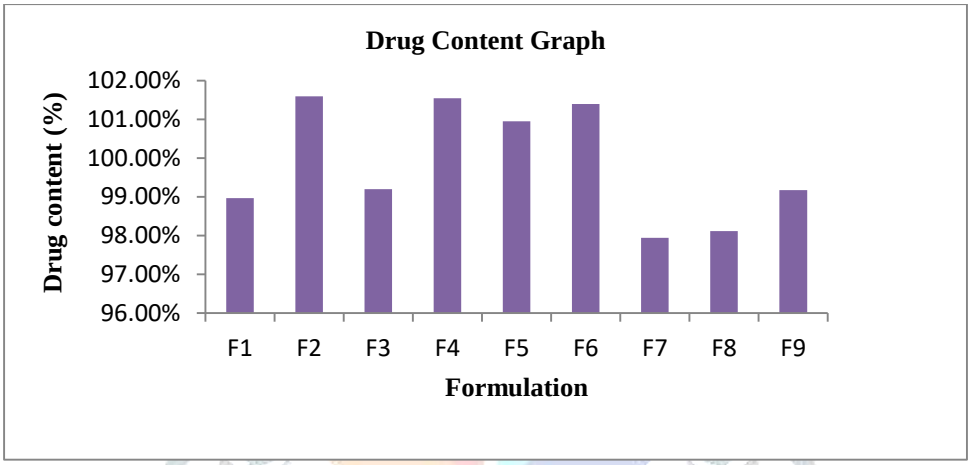


Figure 4: Graph showing Disintegration time of different tablet formulations

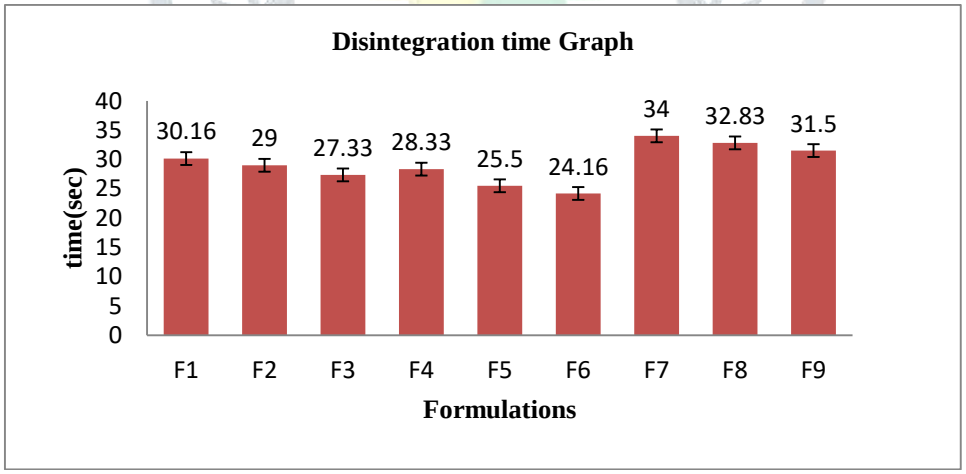


Figure 5: Graph showing wetting time of different tablet formulations

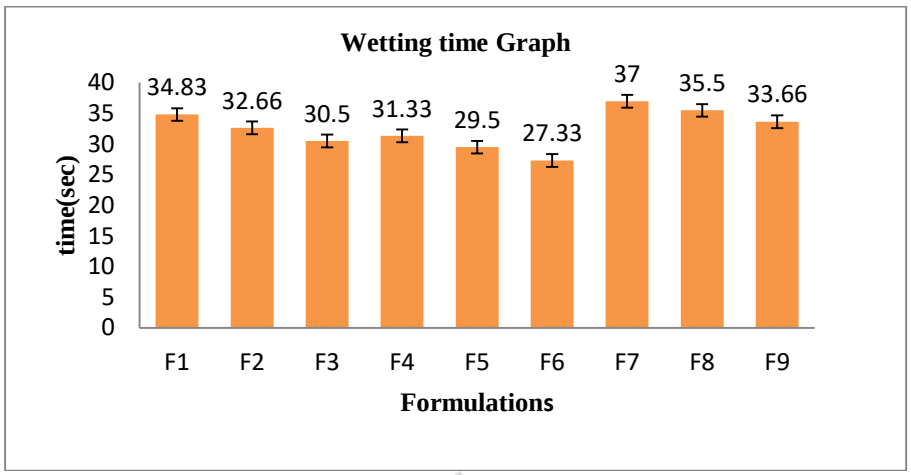


Figure 6: Graph showing *in-vitro* Dispersion time of different tablet formulations

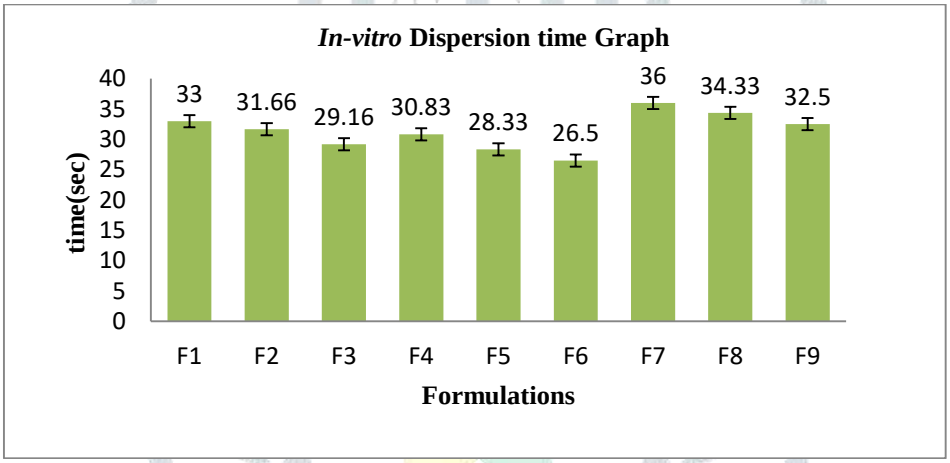


Figure 7*: In-vitro* zero order release profile of formulation F1-F3. %CR vs. Time

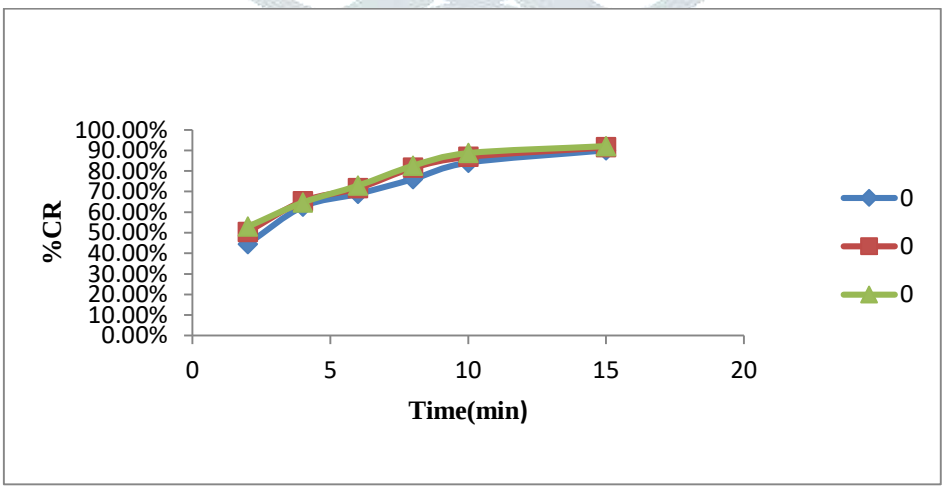


Figure 8: *In-vitro* zero order release profile of formulation F4-F6. %CR vs. Time

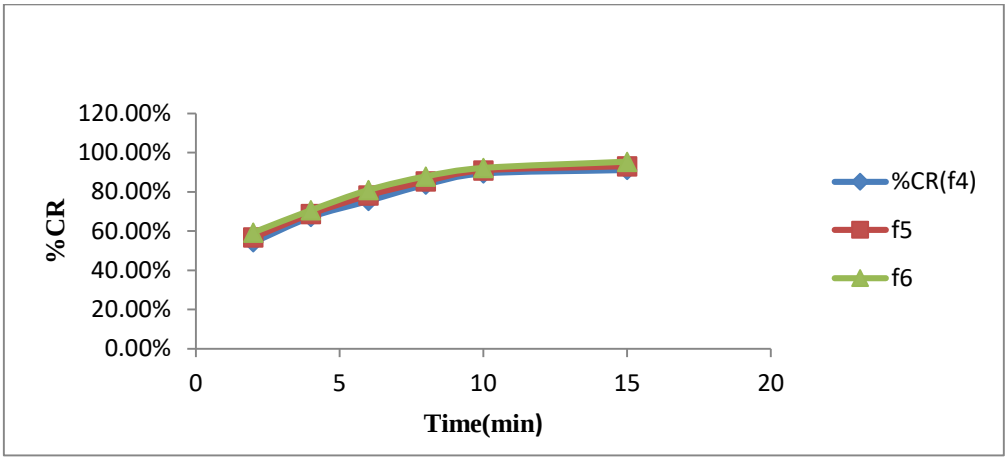


Figure9: *In-vitro* zero order release profile of formulation F7-F9. %CR vs. Time

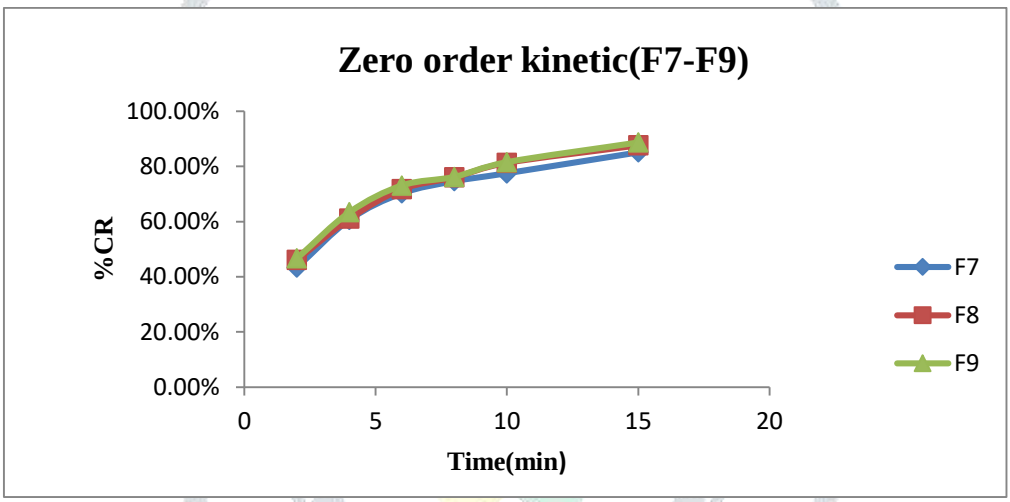


Figure 10*: In-vitro* first order release profile of formulation F1-F3. Log %ARA vs. Time

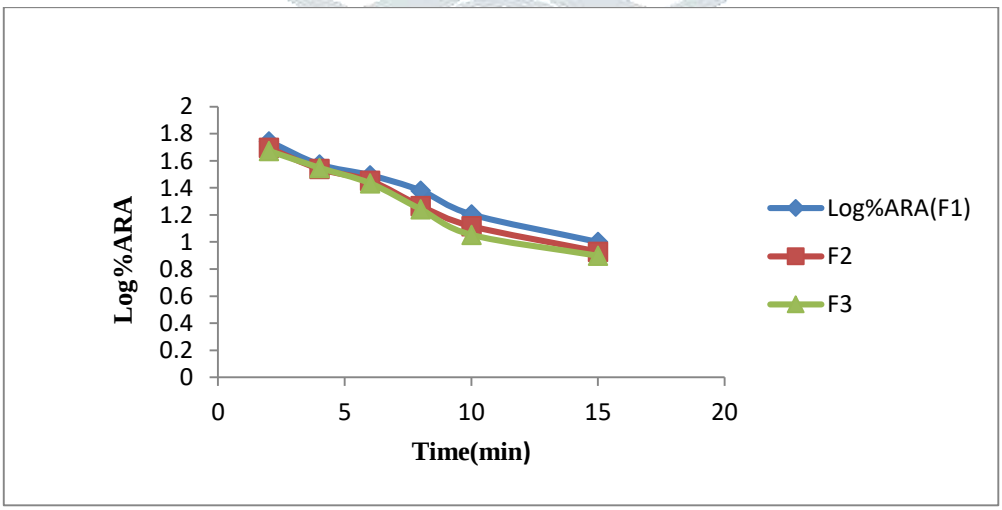


Figure11: *In-vitro* first order release profile of formulation F4-F6. Log %ARA vs. Time

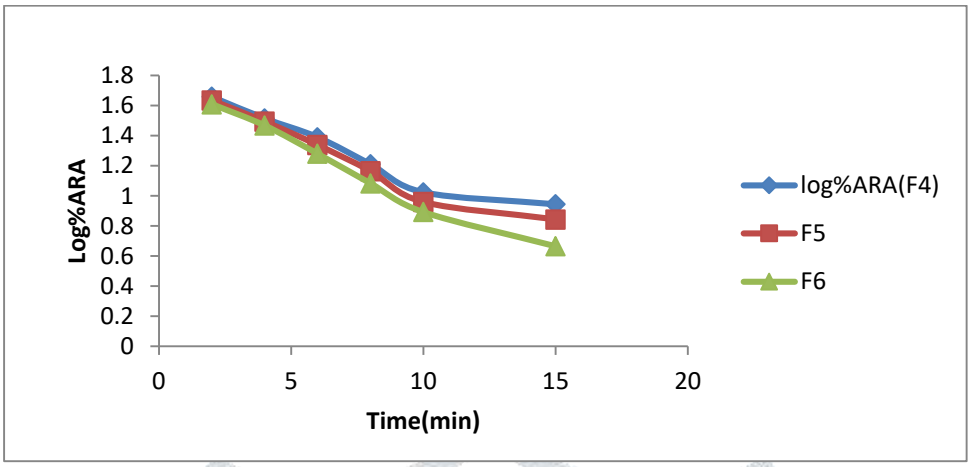


Figure12: *In-vitro* first order release profile of formulationF7-F9. Log %ARA vs. Time

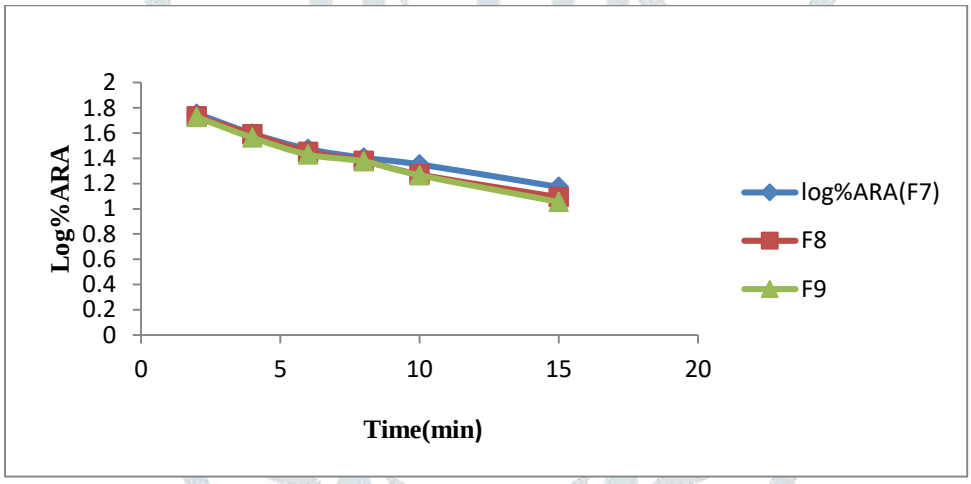


Figure13: *In-vitro* Higuchi release profile of formulation F1-F3. %CR vs. √Time

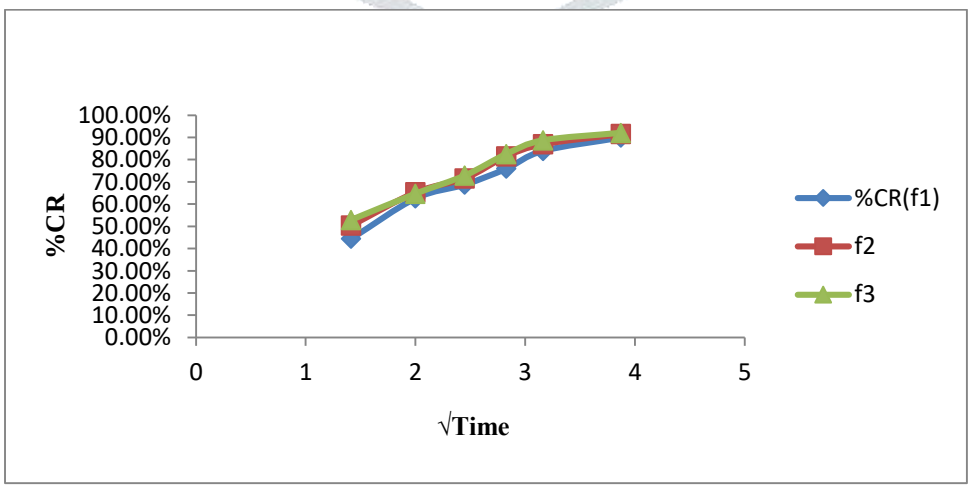


Figure 14: *In-vitro* Higuchi release profile of formulation F4-F6. %CR vs. √Time

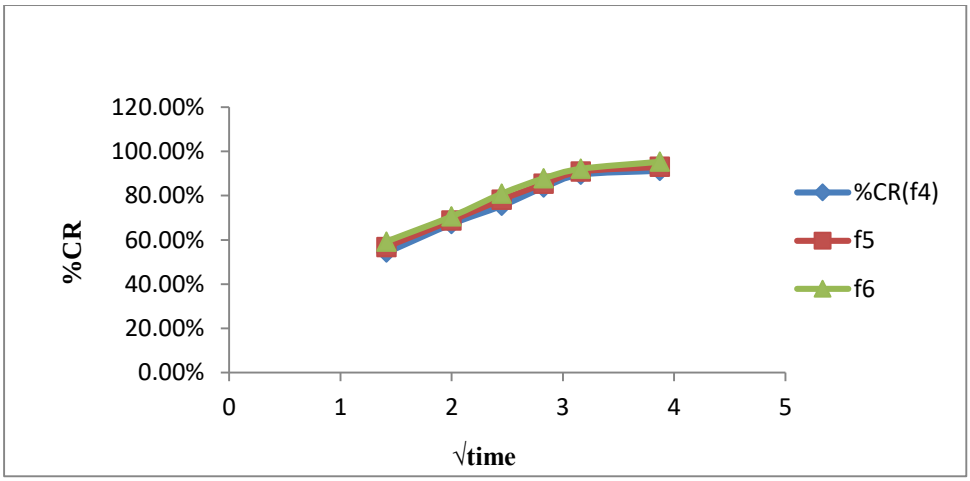


Figure15: *In-vitro* Higuchi release profile of formulation F7-F9. %CR vs. √Time

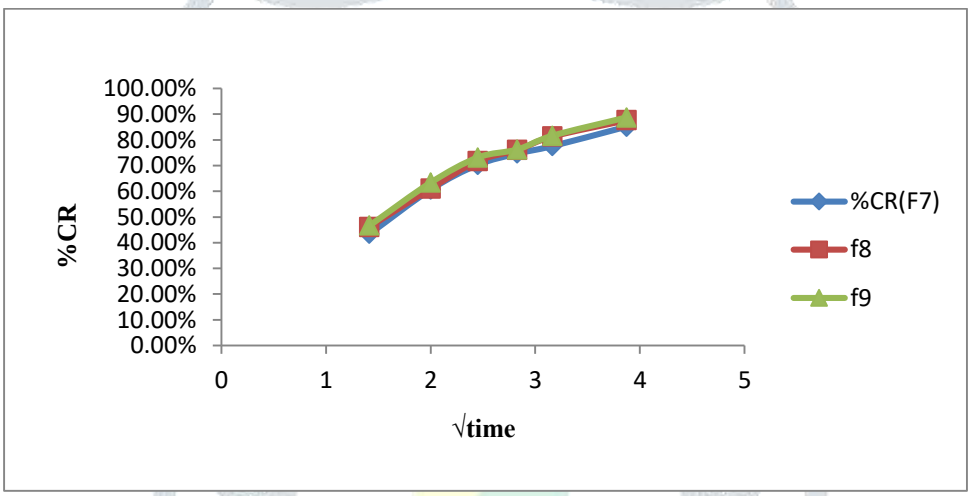


Figure16*: In-vitro* Korsmeyer and Peppas release profile of formulation F1-F3. Log %CR vs. Log time

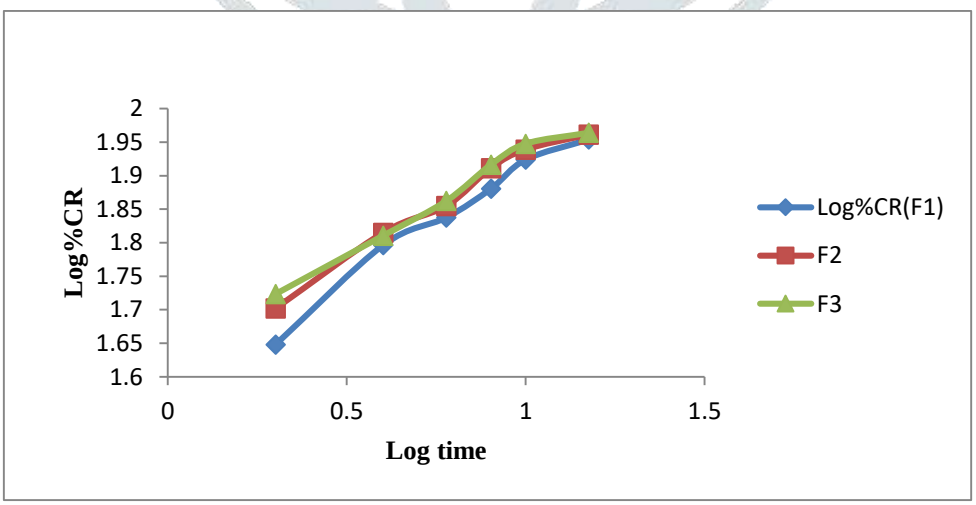


Figure17*: In-vitro* Korsmeyer and Peppas release profile of formulation F4-F6. Log %CR vs. Log time

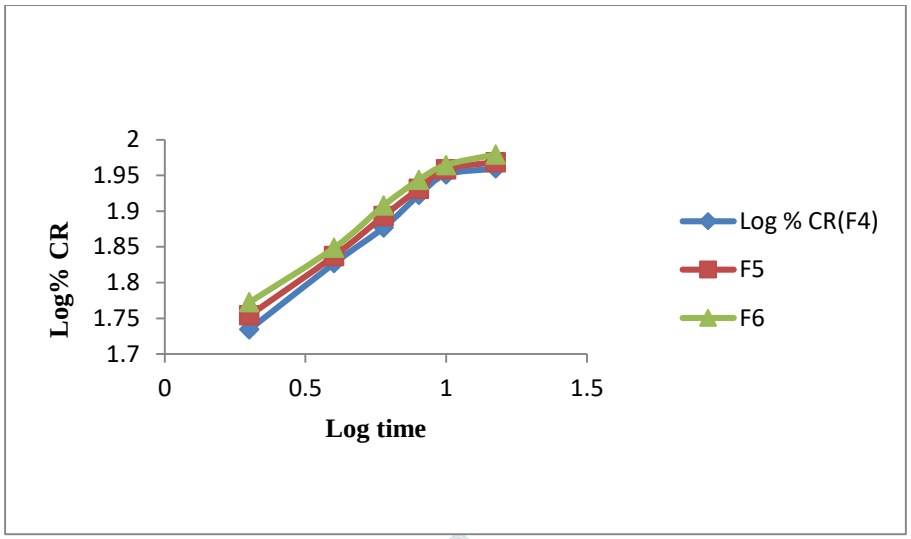
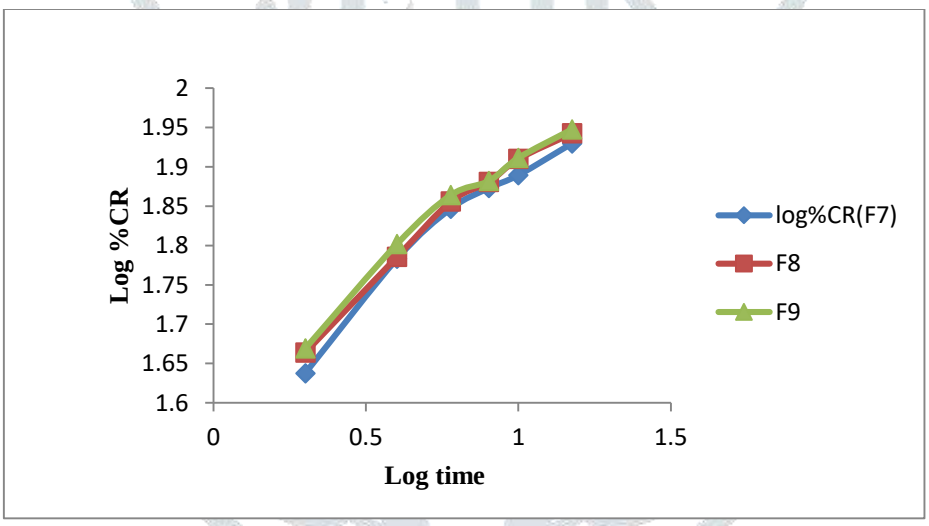


Figure18: *In-vitro* Korsmeyer and Peppas release profile of formulation F7-F9. Log %CR vs. Log time



VII. CONCLUSION:

It was concluded that sublingual tablet of Olanzapine was formulated by direct compression method using 3 different type of superdisintegrant in different ratio such as Croscarmellose 3%, 4%, 5%, Crospovidone 3%, 4%, 5%, Sodium starch glycolate 3%, 4%, 5% along with other excipients. Based upon the results obtained it was concluded that Olanzapine was identified by using preformulation studies like Organoleptic properties, Melting point, Solubility analysis, U.V spectroscopy and drug-excipient Compatibility study by FTIR spectroscopy. Pre-compression parameters for powders showed good flow property and compressibility. Post-compression parameters for prepared Olanzapine sublingual tablets like appearance which was observed by visual examination and all tablets are yellow in color with small size and round shape, weight variation was within the standard limit as per described in I.P as ±7.5 of the weight, thickness and hardness was observed, Friability was observed within the acceptable limits and were found to be within the limits less than 1% as per described in I.P, disintegration time was observed in the Formulation F6 containing 5% crospovidone showed faster disintegration time, wetting time of 27.3±0.47 secs, *in-vitro* dispersion time of 26.5± 0.5sec, percentage drug content was found to be between 97.94 to 101.59% which was within the acceptable limit, *In-vitro* release study of foemulation F6 showing 95.36% drug release within the time interval of 15 min and showed first order kinetics and fickian mechanism of release.

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