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FORMULATION AND EVALUATION OF CONTROLLED RELEASED GASTRO RETENTIVE FLOATING TABLETS OF SUMATRIPTAN SUCCINATE BY USING DIFFERENT POLYMERS

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Abstract:

*Floating tablets containing Sumatriptan succinate were prepared by wet granulation technique using variable concentrations of , HPMCK100M, Xanthan gum and guar gum , with gas generating agent such as sodium bicarbonate.**T**he present investigation to provide a pharmaceutical composition in the form of tablets which constitutes an oral controlled gastric retention drug delivery system of sumatriptan succinate .The consequences of the current examination in this way plainly showed that GFDDS for sumatriptan succinate were effectively figured by utilizing various evaluations of hydrophilic polymers, for example, HPMC K100, xanthan and guargum. From the outcomes it very well may be presumed that F11 with HPMC K100M, and sodium bicarbonate as gas creating specialist gives the 99.92 % of drug discharge up to 12hours*

Keywords: Sumatriptan succinate , hydrophilic polymers, HPMC K100, xanthan and guargum

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INTRODUCTION:

Gastroretentive Drug Delivery System:

Floating drug delivery systems (FDDS) / hydrodynamically controlled systems are low-density systems that have sufficient buoyancy to float over the gastric contents and remain buoyant in the stomach without affecting the gastric emptying rate for a prolonged period [1].

Advantages of Floating Drug Delivery System [1]:

a. The principle of HBS can be used for any medicament or class of medicament.

b. The HBS formulations are not restricted to medicaments, which are principally absorbed from the stomach. Since it has been found that these are equally efficacious with medicaments which are absorbed from the intestine.

c. The HBS are advantageous for drugs absorbed through the stomach e.g. ferrous salts and for drugs meant for local action in the stomach and treatment of peptic ulcer disease.

d. The efficacy of the medicaments administered utilizing the sustained release principle of HBS has been found to be independent of the site of absorption of the particular medicaments.

Disadvantages of Floating Drug Delivery System [2]:

1. They are not suitable candidates for drugs with stability or solubility problems in stomach.

2. FDDS requires sufficiently high level of fluid in the stomach so that the system can float and thus sufficient amount of water (200-250 ml) of water to be taken together with FDDS Drugshaving irritants effect on gastric mucosa are not suitable candidates for FDDS.

Sumatriptan:A serotonin agonist that acts selectively at 5HT1 receptors. It is used in the treatment of migraine disorders. A transdermal patch version of sumatriptan is currently in phase I trials in the U.S.

Method and methodology:

Formulation development and evaluation

Formulation development

Preparation of gastro retentive floating tablets

- Floating tablets containing Sumatriptan succinate were prepared by wet granulation technique using variable concentrations of , HPMCK100M, Xanthan gum and guar gum , with gas generating agent such as sodium bicarbonate**.**
- Different tablet formulations were prepared by wet granulation technique. All the powders were passed through 60 mesh sieve.
- Magnesium stearate was finally added as glidant and lubricant. The blend was directly compressed (9mm diameter punches) using tablet compression machine.
- Each tablet contained 20mg of sumatriptan succinate sodium and other pharmaceutical ingredients as listed in table at each section.

Table No1: Composition of Formulation table for Sumatriptan succinate

Ingredients (mg)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Sumatriptan succinate	25	25	25	25	25	25	25	25	25	25	25	25
Xanthan gum	15	20	25	30	--	--	--	--	--	--	--	--
Guar gum	--	--	--	--	15	20	25	30	--	--	--	--
HPMC 100 cps					--	--	--	--	15	20	25	30
$NaHCO_3$	10	10	10	10	10	10	10	10	10	10	10	10
Citric acid	5	5	5	5	5	5	5	5	5	5	5	5
MCC	91	86	81	76	91	86	82	76	91	86	81	76
Mg. stearate	2	2	2	2	2	2	2	2	2	2	2	2
Talc	2	2	2	2	2	2	2	2	2	2	2	2
Total weight	150	150	150	150	150	150	150	150	150	150	150	150

Analytical method development

Preparation of standard solution for standard graph:

100 mg of Sumatriptan succinate was dissolved in methanol in a 100 ml volumetric flask and the solution was made up to the mark with methanol[44].

Procedure:

The standard solution of **Sumatriptan succinate** was subsequently diluted with 0.1 N Hydrochloric acid to obtain a series of dilutions containing 2, 4, 6, 8 and 10µg of Sumatriptan succinate in 1 ml solution and the absorbance of these solutions was measured at 238nm in spectrophotometer (UV spectrophotometer) against corresponding blank.

The concentration of Sumatriptan succinate and the corresponding absorbance values were given in Table.16. The calibration curve for the estimation of Sumatriptan succinate was constructed by plotting linear best fit between the concentration of Sumatriptan succinate and the corresponding mean absorbance values. The calibration curve for Sumatriptan succinate in 0.1N HCl was shown in Fig10.

Evaluation of powder blend

Angle of repose

The angle of repose of powder blend was determined by the funnel method. The accurately weight powder blend were taken in the funnel. The height of the funnel was adjusted in such a way the tip of the funnel just touched the apex of the powder blend. The powder blend was allowed to flow through the funnel freely on to the surface. The diameter of the powder cone was measured and angle of repose was calculated using the following equation.

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

Where, h and r are the height and radius of the powder cone

Bulk density

Both loose bulk density (LBD) and tapped bulk density (TBD) was determined. A quantity of 2 gm of powder blend from each formula, previously shaken to break any agglomerates formed, was introduced in to 10 ml measuring cylinder. After that the initial volume was noted and the cylinder was allowed to fall under its own weight on to a hard surface from the height of 2.5 cm at second intervals. Tapping was continued until no further change in volume was noted. LBD and TDB were calculated using the following equations.

LBD= Weight of the powder blend/Untapped Volume of the packing

TBD=Weight of the powder blend/Tapped Volume of the packing

Compressibility Index

The Compressibility Index of the powder blend was determined by Carr's compressibility index. It is a simple test to evaluate the LBD and TBD of a powder and the rate at which it packed down. The formula for Carr's Index is as below:

Carr's Index (%) = [(TBD-LBD) x100]/TBD

Total Porosity

Total porosity was determined by measuring the volume occupied by a selected weight of a powder (V_{bulk}) and the true volume of the powder blend (The space occupied by the powder exclusive of spaces greater than the intermolecular spaces, V)

$$\text{Porosity (\%)} = V_{bulk}\text{-}V/V_{bulk} \times 10$$

Evaluation of tablets

Weight variation test

To study weight variation twenty tablets of the formulation were weighed using a electronic balance and the test was performed according to the official method. Twenty tablets were selected randomly from each batch and weighed individually to check for weight variation.

Drug content

Five tablets were weighed individually and powdered. The powder equivalent to average weight of tablets was weighed and drug was extracted in 0.1 N HCl with 0.5% w/v SLS, the drug content was determined measuring the absorbance at 285 nm after suitable dilution using a Systronics UV/Vis double beam spectrophotometer.

Hardness

Hardness indicates the ability of a tablet to withstand mechanical shocks while handling. The hardness of the tablets was determined using Monsanto hardness tester. It is expressed in kg/cm^2. Three tablets were randomly picked and hardness of the tablets was determined.

Thickness

The thickness of the tablets was determined by using vernier calipers. Five tablets were used, and average values were calculated.

Friability Test

The friability of tablets were determined using Roche Friabilator. It is expressed in percentage (%). Ten tablets were initially weighed ($W_{initial}$) and transferred into friabilator. The friabilator was operated at 25rpm

for 4 minutes or run up to 100 revolutions. The tablets were weighed again (W_{final}). The % friability was then calculated by –

$$\%F = 100\ (1-W_0/W)$$

% Friability of tablets less than 1% are considered acceptable.

***In vitro* buoyancy studies**

The *in vitro* buoyancy was determined by floating lag time method described by Dave B.S.The tablets were placed in 900 ml beaker containing 0.1 N HCl. The time required for the tablets to rise to the surface and float was determined as floating lag time. The time between introduction of dosage form and its buoyancy in 0.1 N HCl and the time during which the dosage form remain buoyant were measured. The time taken for dosage form to emerge on surface of medium called Floating Lag Time (FLT) or Buoyancy Lag Time (BLT) and total duration of time by which dosage form remain buoyant is called Total Floating Time (TFT).

***In Vitro* dissolution studies**

The release rate of Sumatriptan succinate from floating tablets was determined using *TheUnited States Pharmacoapoeia* (USP) XXIV dissolution testing apparatus II (paddle method). The dissolution test was performed using 900 ml of 0.1 N HCl 0.5% w/v SLS, at 37 ± 0.5°C and 50 rpm A sample (5 ml) of the solution was withdrawn from the dissolution apparatus 15, 30, 45, 60 min, 2hrs, 4hrs, 6hrs, 8hrs, 10hrs, 12hrs and the samples were replaced with fresh dissolution medium. The samples diluted to a suitable concentration with 0.1N HCl. Absorbance of these solutions was measured at 320 nm using a Systronics UV/Vis double beam spectrophotometer.

The results of *in vitro* release profiles obtained for all the HBS formulations were fitted into four models of data treatment as follows:

1. Cumulative percent drug released versus time (zero-order kinetic model)
2. Log cumulative percent drug remaining versus time. (First-order kinetic model)
3. Cumulative percent drug released versus square root of time (Higuchi's model).
4. Log cumulative percent drug released versus log time (Korsmeyer-Peppas equation).

1. **Zero Order Kinetics:** A zero-order release would be predicted by the following equation.

$$A_t = A_0 - K_0 t$$

Where:

A_t = Drug release at time't'

A_0 = Initial drug concentration

K_0 = Zero-order rate constant (hr^{-1}).

When the data is plotted as cumulative percent drug release versus time, if the plot is linear then the data obeys zero-order release kinetics, with a slope equal to K_0.

2. **First Order Kinetics:** A first-order release would be predicted by the following equation

$$\text{Log } C = \text{Log } C_0 - Kt/2.303$$

Where:

C = Amount of drug remained at time 't'

C_0 = Initial amount of drug

K = First-order rate constant (hr^{-1}).

When the data is plotted as log cumulative percent drug remaining versus time yields a straight line, indicating that the release follows First-order kinetics. The constant 'K' can be obtained by multiplying 2.303 with slope values.

3. **Higuchi's Model:** Drug released from the matrix devices by diffusion has been described by following Higuchi's classical diffusion equation.

$$Q = Kt^{½}$$

Where:

Q = Amount of drug released at time 't'

t = Time (hrs) at which 'Q' amount of drug is released.

When the data is plotted according to equation-3 i.e., cumulative drug released versus square root of time, yields a straight line, indicating that the drug was released by diffusion mechanis. The slope is equal to 'K'.

4. **Korsmeyer and Pappas Model:** The release rates from controlled release polymeric matrices can be described by the equation (4) proposed by korsmeyer et al.

$$Q = K_1 t^n$$

Q is the percentage of drug released at time't', K is a kinetic constant incorporating structural and geometric characteristics of the tablets and 'n' is the diffusional exponent indicative of the release mechanism. Diffusion exponent and solute release mechanism for cylindrical shape.

RESULTS AND DISCUSSION:

The effect of various formulation factors such as concentrations of cellulose polymers, different gums and effervescent agent on floating properties and drug release kinetics were studied to optimize the formulation. The floating lag time mainly depends up on the concentration of effervescent agent present in the matrix. In the present study sodium bicarbonate was used as effervescent agent, as it is cheap and safe.

Table 2: Calibration curve of Sumatriptan succinate in 0.1N HCl

S. No	Concentration (µg/ml)	Absorbance at 229 nm
1.	0	0
2.	2	0.124
3	4	0.242
4.	6	0.323
5.	8	0.402
6.	10	0.539

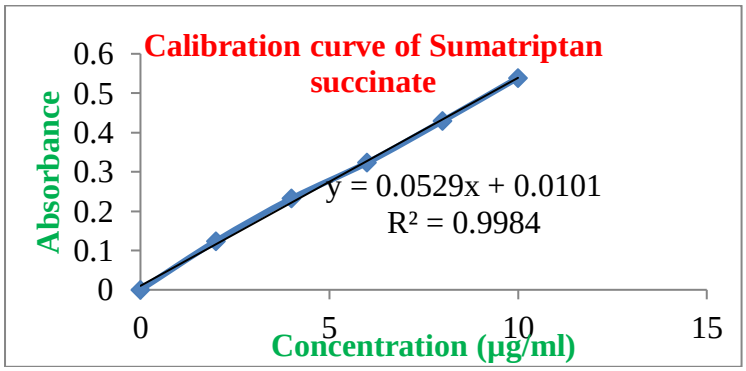


Fig: 1.Standard plot of Sumatriptan succinate at 229 nm

Table: 2:Physical parameters of the prepared formulations

Formulation	Compressibility Index	Angle of repose	Hausner ratio
F1	13.25±0.34	22.25±0.12	1.18±0.82
F2	18.59±0.12	21.16±0.31	1.38±0.54
F3	15.52±0.14	36.52±0.93	1.24±0.78
F4	17.86±0.25	28.56±0.34	1.18±0.56
F5	14.29±0.32	22.85±0.67	1.23±0.38
F6	17.84±0.54	21.43±0.89	1.16±0.32
F7	19.58±0.43	23.45±0.41	1.32±0.93
F8	15.56±0.61	22.47±0.62	1.16±0.26
F9	14.78±0.28	26.89±0.64	1.15±0.46
F10	17.42±0.32	27.45±0.15	1.27±0.62
F11	18.56±0.36	22.51±0.41	1.35±0.39
F12	14.28±0.53	21.85±0.62	1.26±0.20

Table:3. Evaluation of post compression parameters

Batch No.	Average weight (mg)	Hardness (kg/cm^2)	Friability (%)	D.T (min)	Drug content (%)
F1	148.23±0.72	4.23±0.271	0.20	1.7	99.1
F2	149.62±0.56	4.61±0.268	0.12	1.5	99.7
F3	150.71±0.76	4.52±0.36	0.18	1.2	98.23
F4	149.25±1.42	4.73±0.361	0.16	1.5	99.62
F5	151.43.±0.96	4.76±0.213	0.13	2.4	97.27
F6	150.70±0.37	5.85±0.301	0.23	1.10	99.5
F7	148.52±0.18	4.88±0.310	0.20	1.4	101.4
F8	149.96±1.21	4.52±0.213	0.19	1.5	97.9
F9	150.95±1.32	4.36±0.403	0.20	1.3	98.8
F10	149.91±1.44	4.95±0.415	0.18	2.8	99.97
F11	151.84±1.51	4.11±0.353	0.18	1.4	99.2
F12	148.77±1.67	5.17±0.347	0.17	1.5	101.2

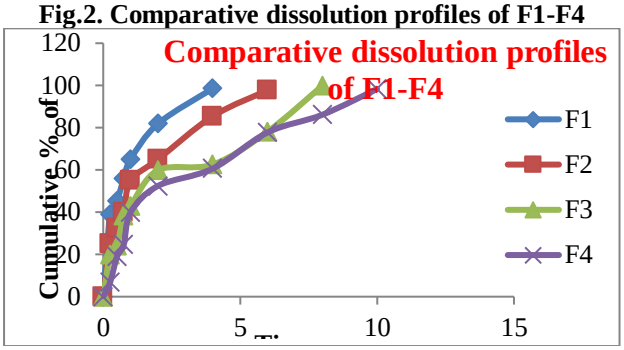
Table:4. *In Vitro* Buoyancy results of prepared formulations

Formulation	Buoyancy lag time (Seconds)	Duration of floating (Hours)
F1	80 **Sec**	8.2
F2	60 **Sec**	7.5
F3	50 **Sec**	8.
F4	60 **Sec**	12.6
F5	1 min 3 **Sec**	8
F6	3 min 10 sec	6
F7	45 **Sec**	7
F8	2 min 5 sec	5
F9	80 sec	10.5
F10	40 **Sec**	>12
F11	30 **Sec**	>12
F12	1 min 6 **Sec**	>12

Table no:5: Cumulative % release of formulations F1-F4

Time (hrs.)	F1±SD	F2 ±SD	F3±SD	F4±SD
0.25	38.93±0.51	24.96±0.65	19.87±1.23	6.76±0.54
0.50	45.34±0.45	32.32±.84	24.05±1.98	18.86±0.84
0.75	55.87±0.95	40.02±0.94	38.45±0.98	24.67±0.38
1	65.08±0.45	54.98±0.97	42.99±0.76	39.97±0.32
2	81.90±0.62	65.04±0.76	59.94±0.46	52.45±0.39
4	98.56±0.72	85.43±0.49	62.54±0.59	60.66±0.76
6	---	97.67±0.39	78.09±0.93	77.76±0.49
8	---	---	99.86±0.49	86.12±0.96
10	---	---	---	98.34±0.67
12	---	---	---	---

Fig.2. Comparative dissolution profiles of F1-F4

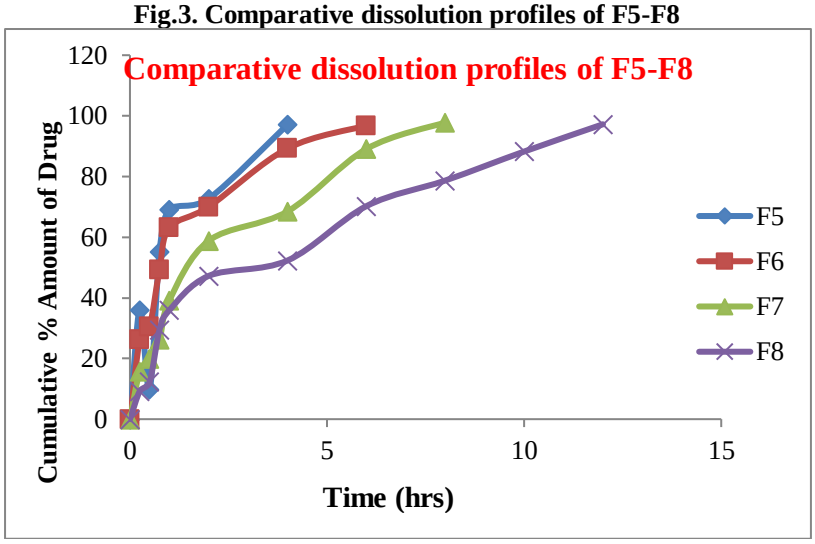


Formulations F1, F2, F3 were prepared by employing Xanthan gum with different polymer proportions.F1 had shown 98.56% in 4 hours,F2 had shown 97.67% in 6 hours, F3 had shown 99.86% in 8 hours and F4 formulation had shown 98.34% drug release in 10 hours. It indicates that F1, F2, F3, F4 formulations which contains Xanthan gum failed to retard the drug release upto 12 hours.

Table: 6. Cumulative % release of formulations F5-F8

Time (hrs)	F5±SD	F6 ±SD	F7±SD	F8±SD
0.25	35.92±0.31	26.26±0.18	15.82±1.13	9.27±0.88
0.50	9.74±0.73	30.52±0.52	20.05±1.98	12.26±0.18
0.75	55.14±0.35	49.20±0.25	26.24±0.98	29.47±0.52
1	69.10±0.25	63.18±0.24	39.18±0.76	35.92±0.32
2	72.70±0.23	70.04±0.76	58.84±0.24	47.25±0.49
4	97.15±0.45	89.29±0.19	68.52±0.62	52.33±0.54
6	---	96.77±0.32	89.10±0.45	70.25±0.60
8	---	---	97.82±0.29	78.69±0.72
10	---	---	---	88.24±0.56
12	---	---	---	97.23±0.66

Fig.3. Comparative dissolution profiles of F5-F8

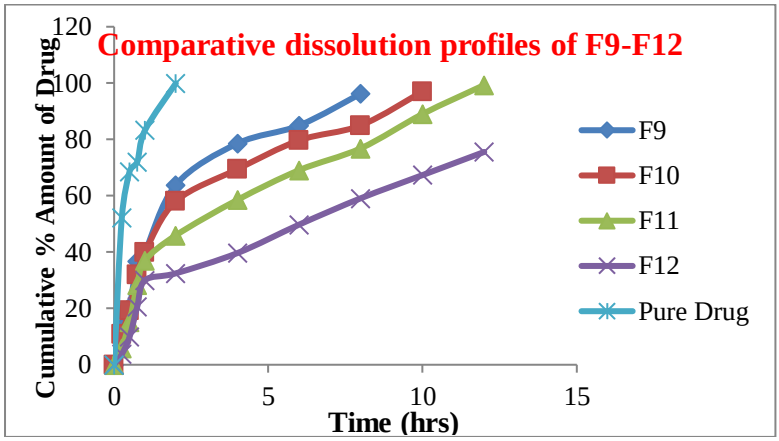


Formulations F5, F6, F7 and F8 were prepared by employing Guar gum with different polymer proportions.F5 had shown 97.15% in 4 hours,F6 had shown 96.77% in 6 hours, F3 had shown 97.82% in 8 hours and F4 formulation had shown 97.23% drug release in 12 hours. It indicates that F5, F6, F7 formulations which contains Guar gum failed to retard the drug release upto 12 hours. But F8 formulation has retarded the drug release upto 12 hours but floating lag time is nearly more than two minutes and it was observed that floating duration was less than 5 hours.

Table: 7. Cumulative % release of formulations F9-F12

Time (hrs)	F9±SD	F10 ±SD	F11±SD	F12±SD
0.25	13.47±0.47	10.96±0.65	5.87±1.52	3.76±0.32
0.50	20.34±0.45	19.32±0.84	15.25±1.92	9.86±0.58
0.75	36.87±0.95	32.02±0.94	28.45±0.48	20.67±0.88
1	40.08±0.45	39.98±0.97	36.99±0.82	29.97±0.93
2	63.90±0.62	58.04±0.76	45.94±0.46	32.45±0.48
4	78.56±0.72	69.43±0.49	58.54±0.59	39.66±0.77
6	84.96±0.23	79.67±0.39	69.09±0.93	49.76±0.29
8	96.29±0.54	85.0±0.59	76.86±0.49	59.12±0.71
10	---	97.03±0.98	89.02±0.58	67.34±0.52
12	---	---	99.92±0.69	75.56± 0.95

Fig.4. Comparative dissolution profiles of F9-F12 & Pure Drug



Formulations F9, F10, F11 and F12 were prepared by employing HPMC 100 K with different polymer proportions.F9 had shown 96.29% in 8 hours, F10 had shown 97.03% in 10 hours, F11 had shown 99.32% in 12 hours and F12 formulation had shown 75.56% drug release in 12 hours. It indicates that F9, F10, formulations which contains HPMC 100 K failed to retard the drug release up to 12 hours. But F11 formulation has retarded the drug release up to 12 hours with less floating lag time and it was observed that floating duration was more than 12 hours.F12 formulation had shown 75.56 % drug release for 12 hours. It indicates that as the concentration of polymer increases the drug release was decreased.

Drug release kinetics:

The drug release profiles of different GFDDS were fitted to various curve fitting approaches of model dependent methods like Zero Order Model, First Order Model, Higuchi Model, Erosion Model and Pappas equation. The values of correlation coefficients (r) obtained by fitting the data to four popular release models are tabulated.

Fig:5.Linear regresion plots of Zero Order for the dissolution profiles of F1- F4

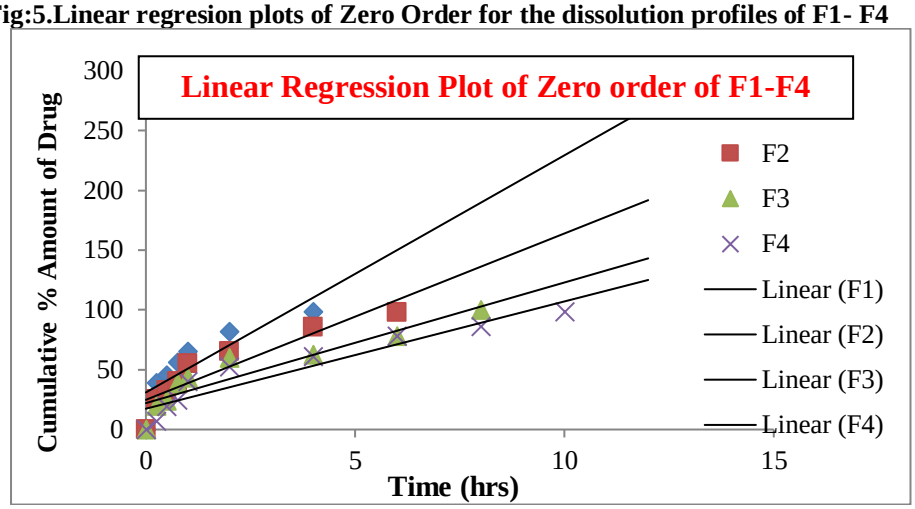


Fig.6. Linear regresion plots of Zero Order for the dissolution profiles of F5- F8

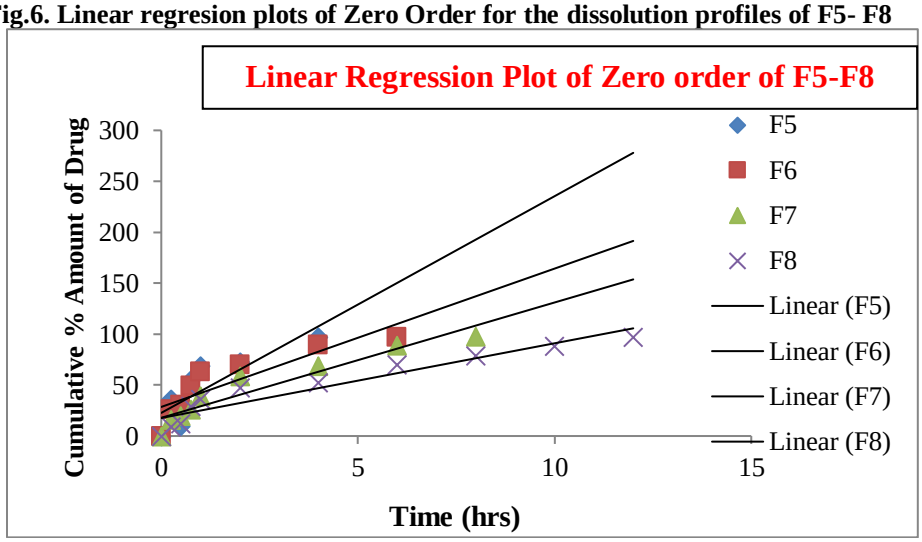


Fig:7. Linear regresion plots of Zero Order for the dissolution profiles of F9-F12 &Pure Drug

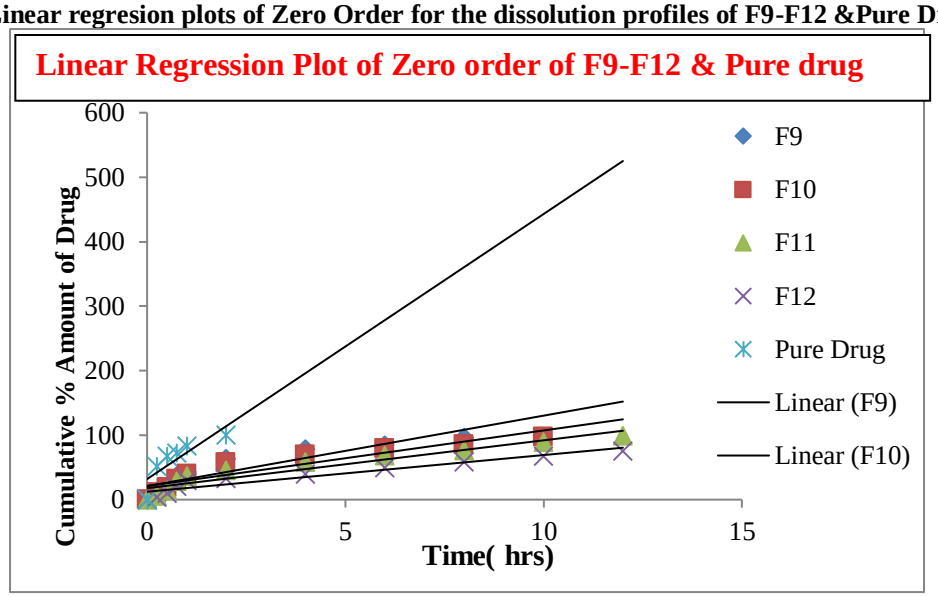


Fig: 8. Linear regresion plots of first Order for the dissolution profiles of F1- F4

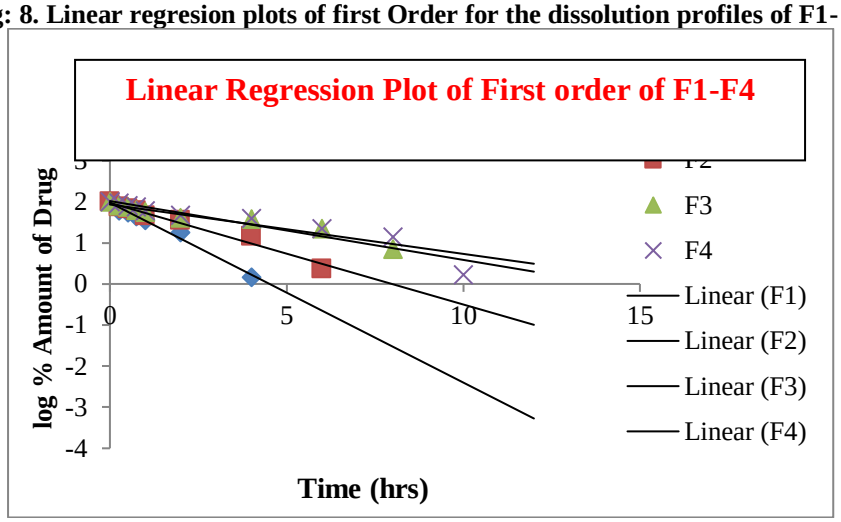


Fig:9. Linear regresion plots of first Order for the dissolution profiles of F5- F8

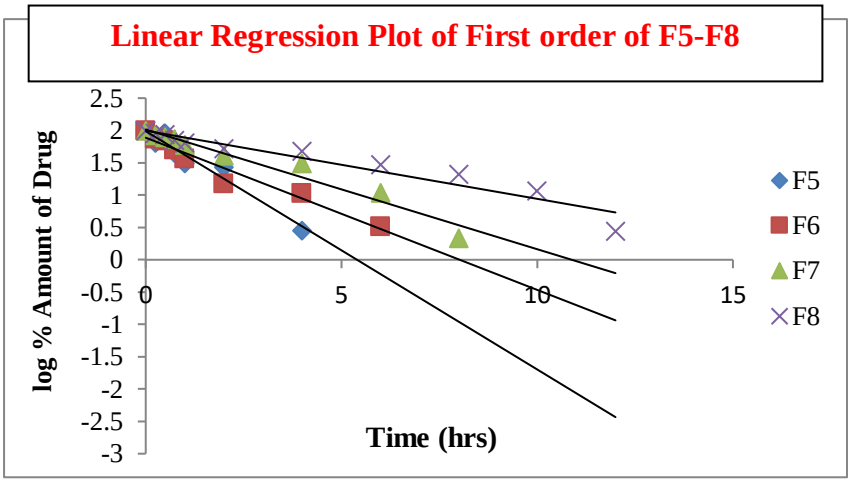


Fig:10. Linear regresion plots of first Order for the dissolution profiles of F9- F12 & Pure Drug

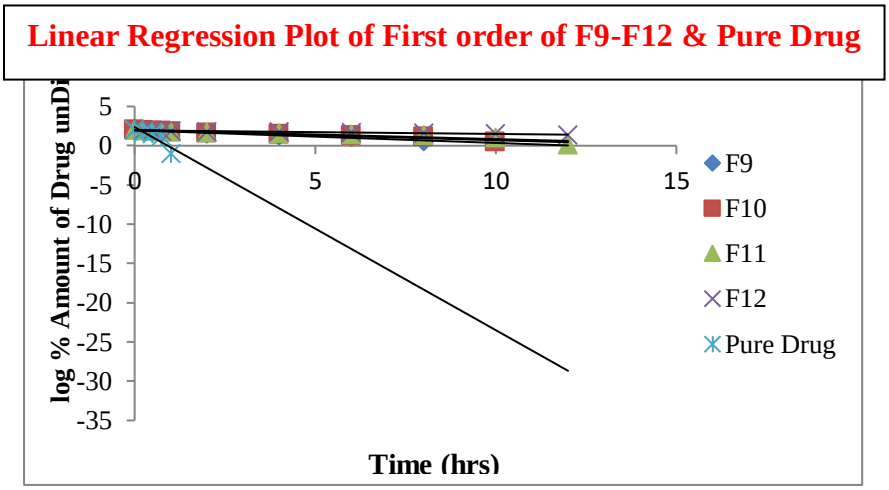


Fig:11. Linear regresion plots of Higuchi Model for the dissolution profiles of F1- F4

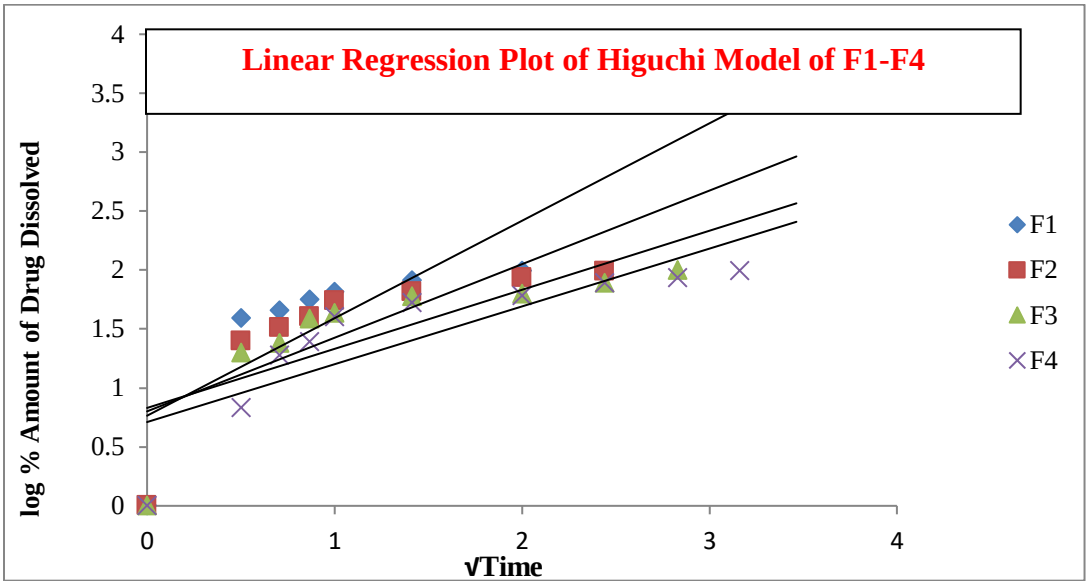


Fig: 12. Linear regresion plots of Higuchi Model for the dissolution profiles of F5-F8

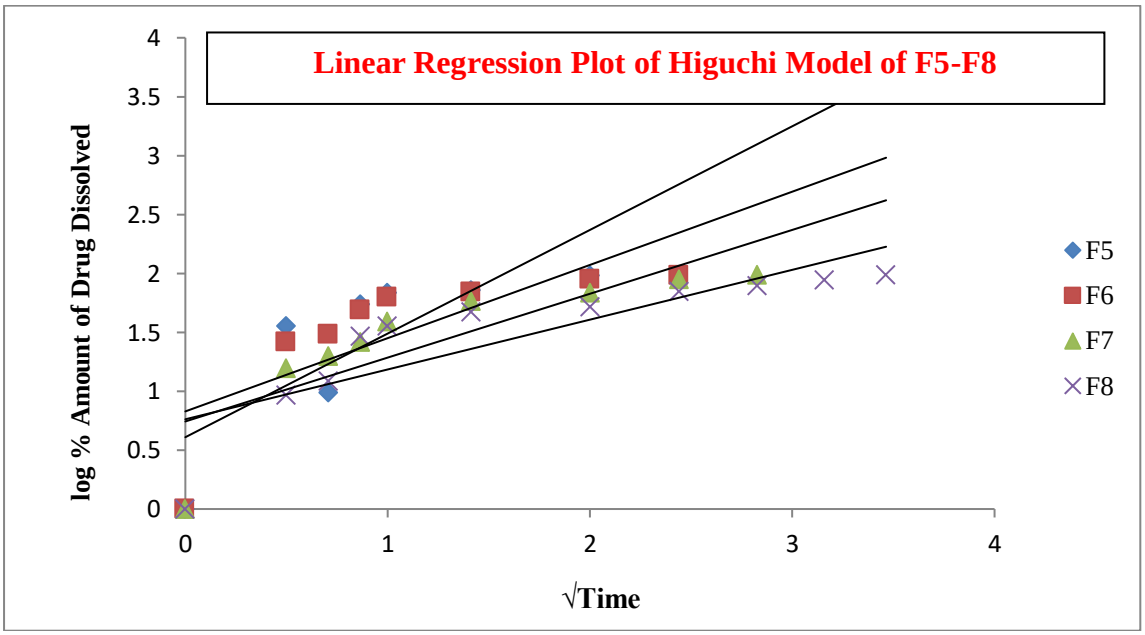


Fig:13. Linear regresion plots of Higuchi Model for the dissolution profiles of F9- F12 & Pure Drug

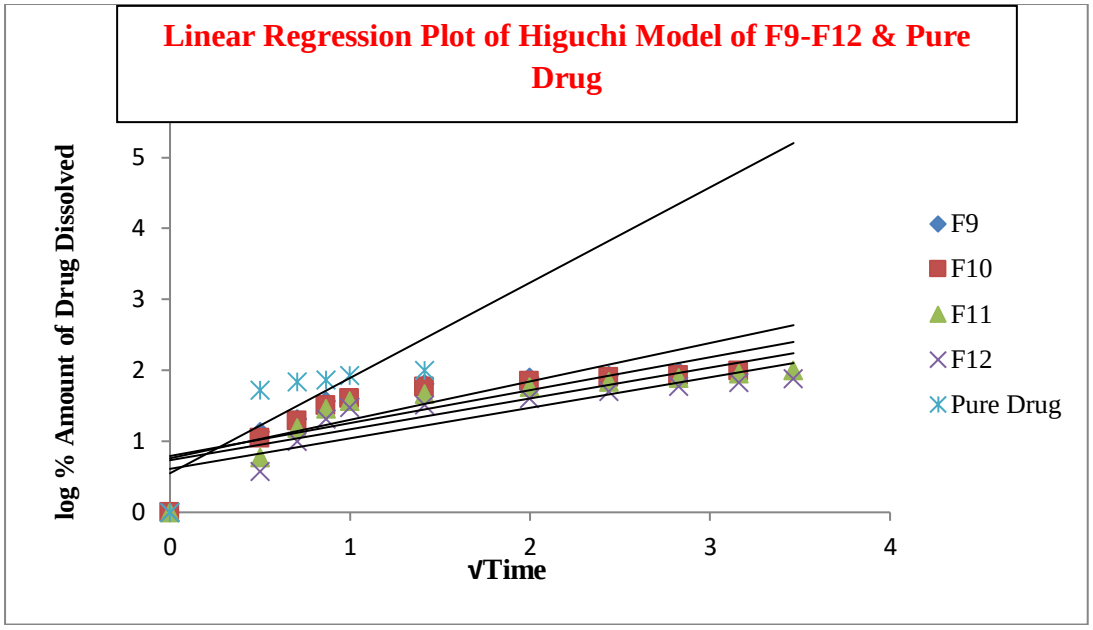


Fig:14. Linear regresion plots of Erosion Model for the dissolution profiles of F1- F4

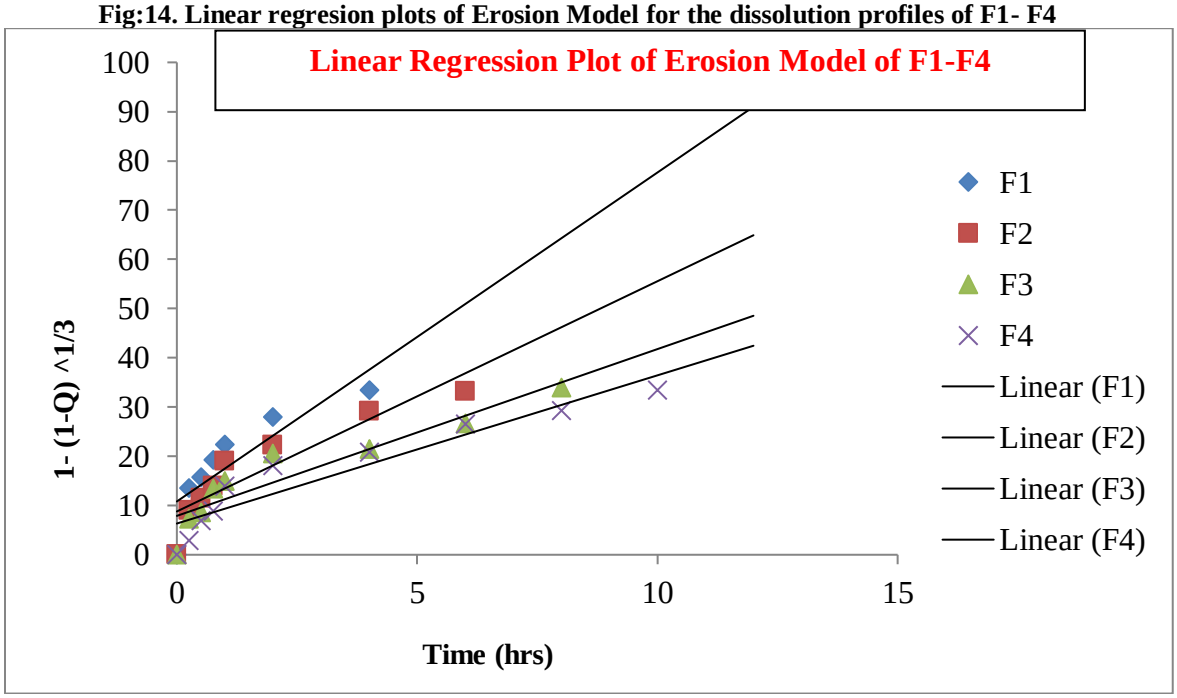


Fig:15. Linear regresion plots of Erosion Model for the dissolution profiles of F5- F8

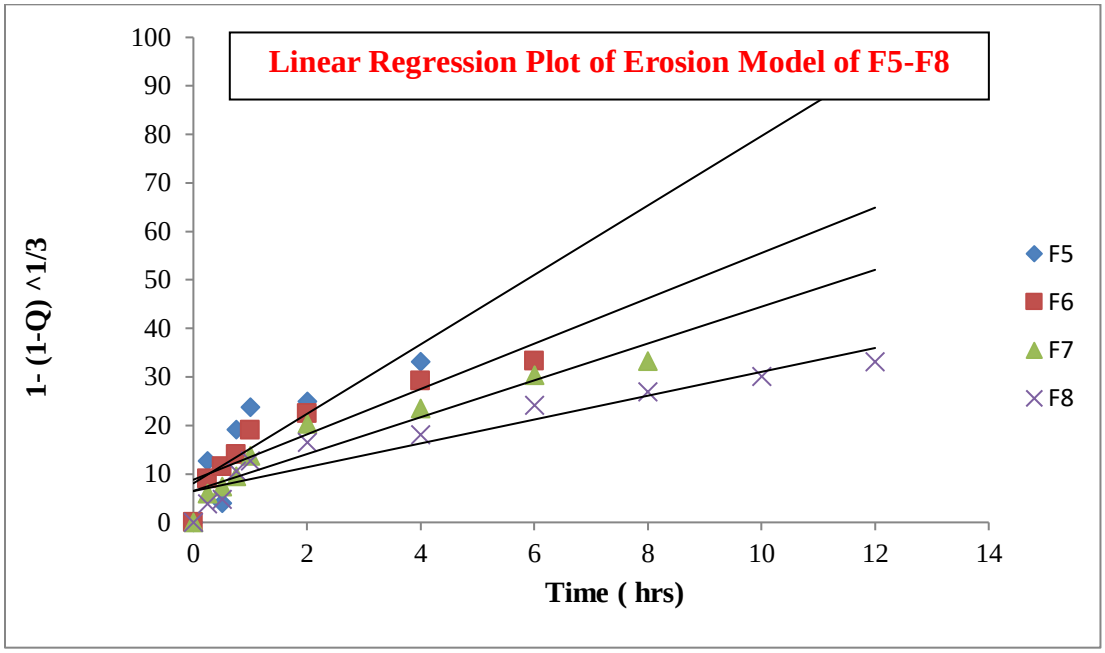


Fig: 16. Linear regresion plots of Erosion Model for the dissolution profiles of F9- F12 & Pure Drug

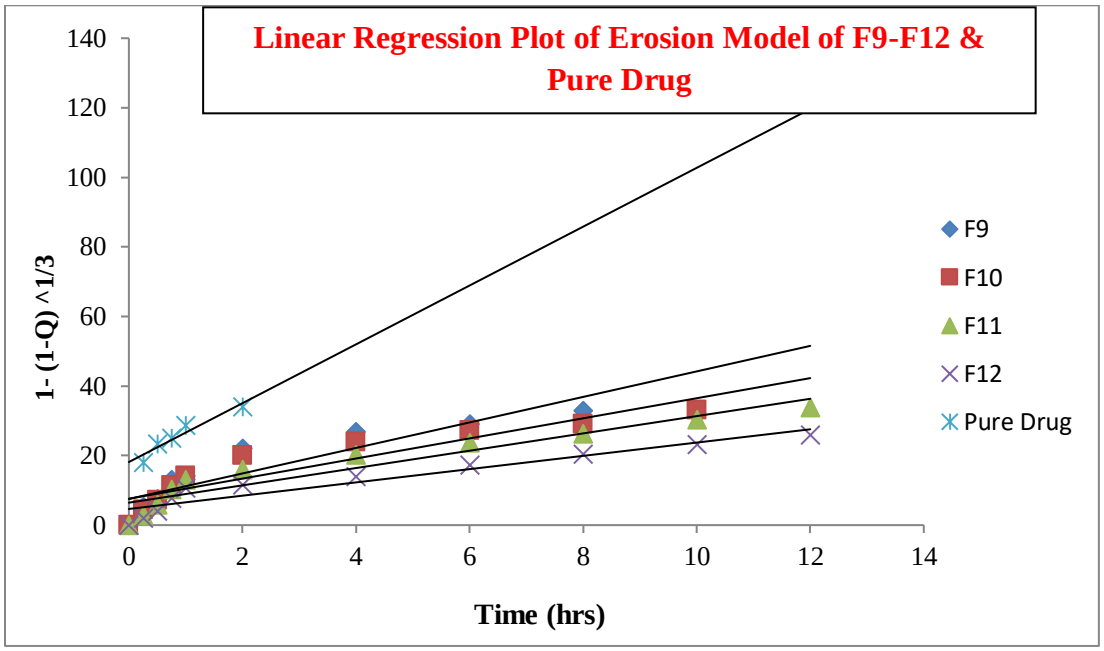


Fig:17. Linear regresion plots of Peppas model for the dissolution profiles of F1- F4

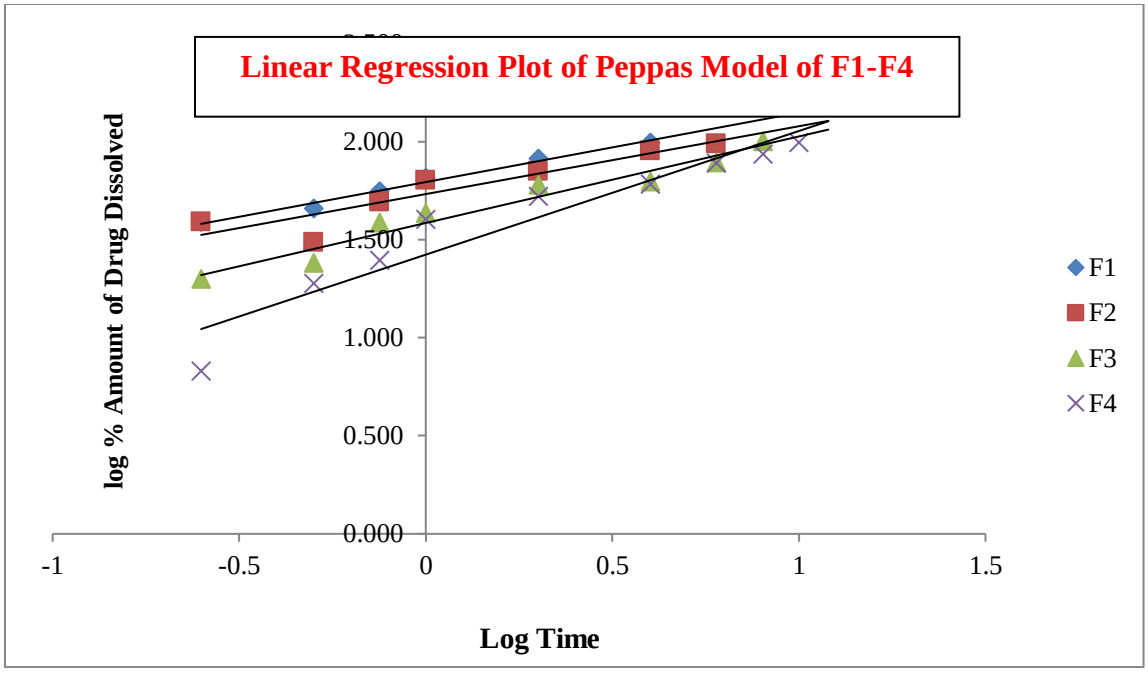


Fig:18. Linear regresion plots of Peppas model for the dissolution profiles of F5- F8

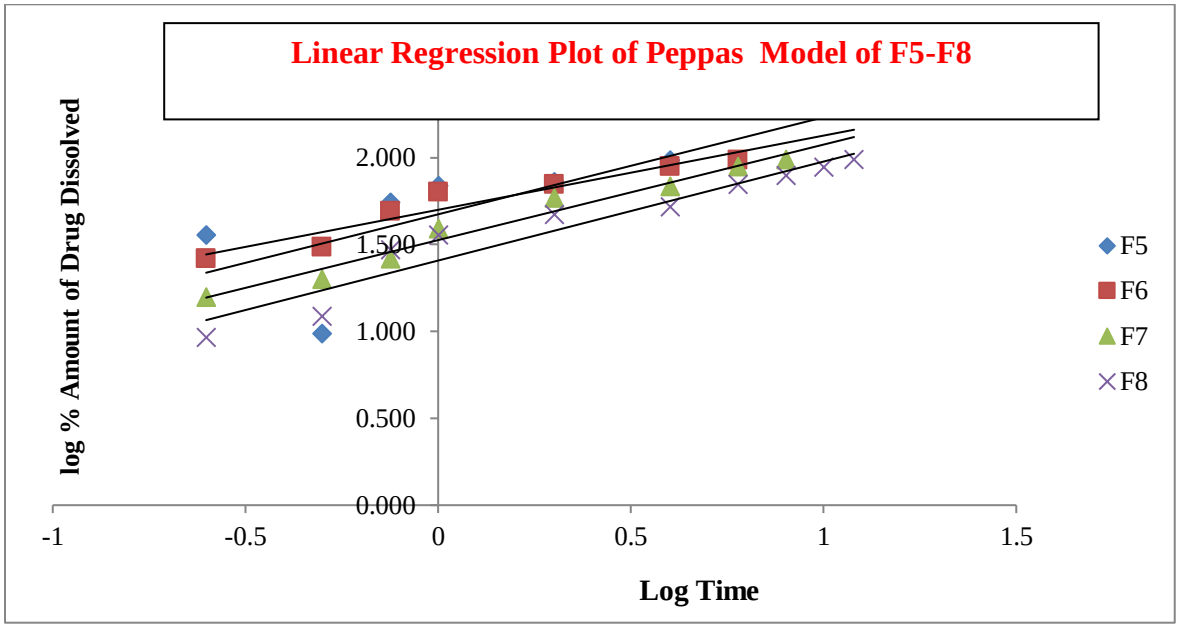


Fig:19. Linear regresion plots of Peppas model for the dissolution profiles of F9- F12 & Pure Drug

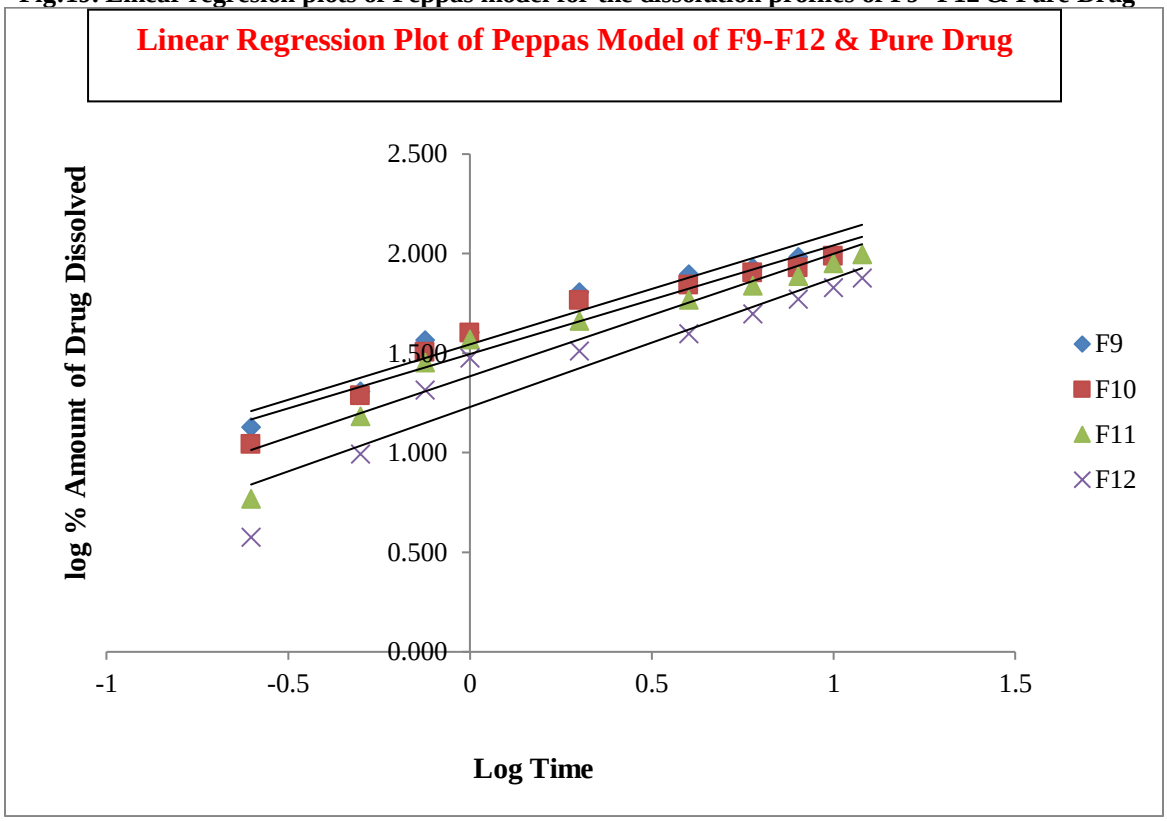


Table: 8. Drug release kinetics of prepared floating formulations (dependent model method)

Formulation	Correlation Co-efficient (r) value				Korsemeyer - Peppas	
	Zero order	First order	Higuchi's	Erosion	r value	n value
F1	0.744	0.983	0.596	0.733	0.984	0.353
F2	0.835	0.97	0.613	0.826	0.853	0.345
F3	0.863	0.936	0.615	0.855	0.954	0.441
F4	0.891	0.894	0.709	0.886	0.911	0.630
F5	0.703	0.946	0.638	0.698	0.441	0.558
F6	0.759	0.949	0.590	0.826	0.921	0.427
F7	0.899	0.952	0.694	0.893	0.973	0.549
F8	0.903	0.924	0.703	0.898	0.925	0.569
F9	0.840	0.967	0.671	0.834	0.943	0.556
F10	0.850	0.935	0.667	0.844	0.935	0.547
F11	**0.901**	**0.873**	**0.705**	**0.896**	**0.900**	**0.615**
F12	0.912	0.971	0.734	0.906	0.883	0.646
Pure Drug	0.84	0.730	0.700	0.921	0.986	0.311

The drug release of GFDDS prepared from HPMCK100M of F11 formulation followed zero order kinetics, which is indicated by r values of zero order release model (0.901), slightly higher when compared to those of first order release model (0.873).

The relative contributions of drug diffusion and matrix erosion to drug release were further confirmed by subjecting the dissolution data to Higuchi model and erosion model. It was found that diffusion (0.705) as well aserosion (0.896) governs the drug release from these formulations as indicated by r values

Though the drug release is governed by diffusion as well as erosion, the contribution of drug matrix erosion is found to be slightly higher than that of

diffusion as indicated by the higher r values of erosion model. It can be concluded that the drug release is predominately governed by erosion rather than diffusion. From this, the increase in the polymer content in the GFDDS decreased the dissolution rate of drug.

When the release data were analyzed as per peppas equation, the release exponent 'n' for F11 formulation was >0.5 to <1 with all the formulations indicating Non Fickian Diffusion as the release mechanism.

Maintenance of drug delivery systems in the stomach delays G.I. travel time, bringing about improved oral bioavailability of the drugs. Different methodologies have been created to hold the dose structure in the stomach. Gastric gliding drug delivery systems offer various favorable circumstances over other gastric maintenance systems. There are no reports on the plan of gastric drifting drug delivery systems of montelukast. Consequently, in the current examination, GFDDS of sumatriptan succinate were created with hydrophilic polymers like HPMC K100M, thickener and guar gum to convey sumatriptan succinate to the upper pieces of the small digestive tract in a controlled way to improve its bioavailability. The GFDDS of sumatriptan succinate were created as tablets including a bubbly specialist.

The GFDDS of sumatriptan succinate arranged from all the polymers were seen as of good quality satisfying all the official and different prerequisites of compacted tablets. The impact of various detailing boundaries, for example, convergences of bubbly specialist on gliding properties and drug discharge energy were contemplated and the plans were enhanced. The convergence of the bubbly specialist enormously affected the skimming slack time.

The GFDDS of sumatriptan succinate arranged from HPMC stayed unblemished and the minimization of the tablet was not influenced during the in vitro disintegration test. It was discovered that the drug discharge from the GFDDS of sumatriptan succinate for the most part relied on the centralization of polymer present in the GFDDS for all the twelve plans. By expanding the convergence of the polymer, diminished disintegration rates were gotten for the all the polymers. The moderate pace of polymer hydration and the nearness of bubbly operator caused a burst discharge at first. Thus, all the GFDDS were figured without expansion of the stacking portion. In spite of the fact that the discharge rate principally relied upon the extent of the polymer, the entangled gas inside the hydrogel additionally affected the pace of drug discharge from the GFDDS. By expanding the extent of the bubbly operator, the porosity delivered by the captured gas expanded and disintegration rate was expanded.

The disintegration information were fitted to four famous discharge models, for example, zero-request, first-request, dispersion and disintegration conditions to decide the discharge component. The connection coefficients and the incline esteems from Higuchi plots demonstrated that the discharge system followed dispersion and disintegration with zero request energy.

The consequences of the current examination in this way plainly showed that GFDDS for sumatriptan succinate were effectively figured by utilizing various evaluations of hydrophilic polymers, for example, HPMC K100, xanthan and guargum. From the outcomes it very well may be presumed that F11 with HPMC K100M, and sodium bicarbonate as gas creating specialist gives the 99.92 % of drug discharge up to 12hours.

REFERENCES:

1. M. Pooja, S. Kamal, S. Navneet *, SurenderVerma and Vipin Kumar. Floating drug delivery system: An innovative acceptable approach in gastroretentive drug delivery. ***Scholars Research Library.***2 (2): 257-270, 2010.
2. W. Phuapradit and S. Bolton. The influence of tablet density on the human oral absorption of sustained release acetaminophen matrix tablets. ***Drug Dev. Ind. Pharm.*** 17(8): 1097-1107, 1991.
3. G. Sanjay and S. Sharma. Gastroretentive drug delivery systems. ***Drug Delivery Oral.***160-166, 2003.
4. S. P. Vas, Roop K. Khar. Controlled drug delivery concepts and advaces. 9-10, 2002.
5. N. S. Brahma, H. Kwon and Kim. Floating drug delivery systems: an approach to oral controlled drug delivery via gastric retention. ***J.Con.Rele.*** 63(3): 235-259,2000.
6. P.G. Yeole, S. Khan and V.F. Patel. Floating drug delivery systems: need and development**.** ***Indian J. Pharm. Sci.*** 67(3) : 265-272, 2005.
7. P. J. Sinko, N. R. Patel, and P. Hu. Site-specific oral absorption of didanosine: in situ characterization and correlation with extent of absorption in vivo. ***Int.J.Pharm.***109(2): 125, 1994