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Formulation and Evaluation of Floating Tablet of Metoprolol Succinate

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ABSTRACT

The aim of the present work is Formulation and Evaluation of Floating Tablet of Metoprolol Succinate. Metoprolol Succinate is a BCS class I drug used in the treatment of Angina pectoric, Heart attack, Hypertension and has short half-life 3-7hours. In the present study it was planned to prepare sustained release floating tablets of Metoprolol succinate by using HPMC E5 and Gum Karaya excipients. The procured sample of drug was authenticated by pre-formulation study like melting point, IR spectra, UV analysis were done. Results of pre-formulation studies show that Metoprolol Succinate was pure and complies with standard. Prior to compression, the powder blend were evaluated for angle of repose, bulk density, tapped density, compressibility index, Hausner's ratio. Results of pre-formulation studies show that Metoprolol Succinate was pure and complies with standard. Formulations were evaluated for various evaluation parameters like hardness, thickness, weight variation, friability, drug content, floating lag time, floating time, swelling index and in vitro drug release. From the results of evaluation parameters it was observed that formulation F6 shows best results for floating lag time 4min floating time up to 12 hours and consistent drug release 96.15 % as compared to other formulations. So formulation F6 was finalized as a optimized formulation for further study. On the basic of above finding it was concluded that sustained release floating drug delivery system was successfully achieved.

KEYWORDS: *Metoprolol Succinate, HPMC E5M, Gum Karaya, Floating Tablets*

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INTRODUCTION

Metoprolol succinate is a beta-selected adrenergic receptor blocker for oral administration. Treatment of hypertension, angina and heart failure. Half-life is 3-7 hours. The dose is Attention was paid to the development of sustained release tablets, as without it can cause nocturnal seizures, so attention was made to develop the sustained release tablets of Metoprolol succinate with hydroxypropyl methylcellulose E5M and Gum Karaya.

The need for gastric retention form (GRDF) has led to extensive efforts in both science and research. The industry for the development of such drug delivery systems. Prolonged gastric retention time of dose The morphology has therapeutic value. Floating dosage forms stand out among the methods available to achieve this. An important promise. The basic idea behind the development of such a system is to stay constant. The drug does not break down, but the level of the drug in plasma. medicine Normally, it floats in gastric juice and slowly dissolves at a given rate to release the drug. Adjust the dosage form to keep the drug level in the blood constant. Several approaches are used to form gastric retention systems such as mucosal adhesion. Flotation, sedimentation, expansion and modified molding system. Both single unit systems (tablets or capsules) In addition, multiple unit systems (multi-particle systems) are described in the literature. Including FDDS Provides the most effective and rational protection against premature and accidental gastric emptying compared to others A method proposed to increase gastric retention time (GRT) in solid dosage form.

Metoprolol succinate, which is better absorbed from the upper part of the gastrointestinal tract and is repeatedly administered, is the best candidate for the preparation of gastric-specific formulations. The gastric retention formulation of metoprolol succinate will increase the retention time of the drug in the stomach in a delayed release pattern. This is particularly advantageous in reducing the side effects of the drug and increasing the therapeutic effect. Sustained release of the drug is beneficial in reducing the frequency of drug administration, which will result in increased patient compliance. Such formulations can be developed on an industrial scale to achieve the greatest benefits and efficient treatment of hypertension, angina, heart failure. In the solid dosage form, the oral route is the most preferred of all routes of administration. Tablets are the most commonly used solid dosage form given orally. Sustained oral drug delivery can be complicated due to the limited residence time in the stomach. Because most drugs are absorbed into the stomach or upper small intestine, rapid gastrointestinal passage reduces total drug release and minimizes dose effectiveness.

Prolonged gastric retention improves bioavailability, reduces drug waste, and improves solubility. A drug with low solubility in a high pH environment. Effervescent flotation form made with help From swelling polymers such as methylcellulose and various effervescent compounds such as sodium Bicarbonate, tartaric acid, citric acid. When they come in contact with acid. The contents of the stomach are released by CO2 and trapped in a swollen hydrophilic colloid that gives the stomach buoyancy to dosage form.

The purpose of this study was to develop an gastro retentive formulation using HPMCE5M and Gum Karaya as natural polymer which releasing drugs in the stomach and upper gastrointestinal tract (GI) ,and enhanced opportunity of absorption in the stomach and upper gastrointestinal tract instead of the lower gastrointestinal tract.

MATERIALS AND METHODS:

Materials

Metoprolol Succinate received as a gift sample from 'USV Pharma pvt.ltd.' Mumbai. All the excipients such as HPMC E5M, Gum Karaya, Carbopol 940, Sodium bicarbonate, Citric acid, Magnesium stearate, talc were obtained from Research-lab fine chem. Industries, Mumbai.

Methodology

Direct Compression Method

Different tablets formulations were prepared by the direct compression technique. All the powders were passed through 120# mesh sieve. The required quantity of drug, polymers, sodium bicarbonate, citric acid, Carbopol 940, magnesium stearate, talc were mixed thoroughly. Mixing was continued for another minute and the mixed blend was studied for precompression parameters. Finally, required quantity of mixture was weighed and then compressed using a tablet compression machine.

PREFORMULATION STUDIES OF METOPROLOL SUCCINATE

Identification and Characterization of Metoprolol Succinate

Preformulation may be described as a phase of the research and development process where formulation characterizes the physical, chemical and mechanical properties of new drug substances, in order to develop stable, safe and effective dosage forms.

1. Color

A small quantity of pure Metoprolol Succinate powder was taken in a butter paper and viewed in well illuminated place.

2. Taste and odour

Very less quantity of Metoprolol Succinate was used to get taste with help of tongue as well as smelled to get the odour.

3. Melting point

The melting point of the drug substances was determined by using melting point apparatus. The melting point was determined by introducing small amount of substance in the capillary attached to graduated thermometer and constant heat was applied with the assembly suspended in the paraffin bath. The drug sample was tested in temperature range 100-200 0C and point at which drug melts was noted. The melting point is reported in results section.

UV-Spectroscopic Analysis of Drug

A. Determination of Absorption Maxima

UV scanning was done in Shimandzu double beam UV spectrophotometer using 10 µg/ml drug solutions in the wave length range of(200-400 nm). 0.1 N HCl solution used as a blank

B. Preparation of Calibration Curve

1. Preparation of 0.1 N HCl

Dissolve 8.5 ml of concentrated HCl in 1000 ml of distilled water

2. Preparation of standard drug solution

Stock solutiom:

10 mg of Metoprolol Succinate was dissolved in 10 ml of 0.1 N HCl, to get a solution of 1000 µg/ml concentration.

Standard solution:

1 ml of stock solution was made to 10 ml with 0.1 N HCl thus giving a concentration of 100 µg/ml.

Aliquot of standard drug solution ranging from 0.2ml, 0.3 ml, 0.4 ml, 0.6 ml,0.8ml and 1 ml were transferred into 10 ml volumetric flask and were diluted up to the mark with 0.1 N HCl. Thus the final concentration ranges from 2-10 µg/ml. Absorbance of each solution was measured at 222 nm against 0.1 N HCl as a blank. A plot of concentrations of drug versus absorbance was plotted.

FT-IR spectrum of Metoprolol succinate

FT-IR spectra of Metoprolol Succinate samples were recorded using potassium bromide (KBr) pellets at resolution of 4cm-1 for its authentication and to study principle peaks using FT-IR spectrophotometer (FT-IR 8400S, Shimadzu). Dry sample of drug and potassium bromide was mixed uniformly and filled into the die cavity of sample holder and an IR spectrum was recorded. The identified peaks were compared with the principle peaks of reported IR spectrum.

Drug-Excipients compatibility Studies by using FTIR

The selected polymers were characterized by FT-IR spectroscopy and the FTIR spectra of the pure drug Metoprolol Succinate with used excipients like HPMC E5, Gum karaya, Sodium bicarbonate, Talc, Carbopol 940, Magnesium Stearate. The instrument was operated under dry air purge and the scans were collected at scanning speed 2 mm/sec with resolution of 4 cm-1 over the region 4000-400 cm-1. The scans were evaluated for presence of principle peaks of drug, shifting and masking of drug peaks and appearance of new peaks due to polymer interaction.

FORMULATION BATCHES OF METOPROLOL SUCCINATE FLOATING TABLETS

Table 1: Formulation composition of Floating tablets of Metoprolol Succinate

Sr.no	Formulation	MF1	MF2	MF3	MF4	MF5	MF6
	Ingredients	Unit formula (mg per tablet)					
1	Metoprolol Succinate	100	100	100	100	100	100
2	Carbopol 940	100	80	60	100	80	60
3	HPMC E5	50	70	90	-	-	-
4	Gum karaya	-	-	-	50	70	90
5	Sodium bicarbonate	20	20	20	20	20	20
6	Citric acid	20	20	20	20	20	20
7	Magnesium stearate	2	2	2	2	2	2
8	Talc	8	8	8	8	8	8
	Total	**300**	**300**	**300**	**300**	**300**	**300**

PRE-COMPRESSION EVALUATION OF POWDER BLEND

Powder blend were evaluated for various parameters.

Bulk Density

It is the ratio of total mass of powder blend to the bulk volume of powder blend. It was measured by pouring the weighed amount of powder blend into a measuring cylinder. This initial volume is called bulk volume; from this the bulk density was calculated according to the formula mentioned below. It is expressed in g/ml.

Bulk density:- BD = Weight of the powder/Volume of the powder.

Tapped Density

It is the ratio of weight amount of the powder blend to the tapped volume of powder blend. The powder was introduced into a measuring cylinder with the aid of funnel and tapped for 100 times on a wooden surface of 2 sec intervals and the volume attained was the tapped volume. It is expressed in g/ml.

Tapped density:- TBD = Weight of the powder/Tapped volume of the powder.

Angle of Repose

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

$$\theta = \tan^{-1}(h/r)$$

where,

θ = the angle of repose

h = height of the heap of the powder

r = radius of the heap of the powder.

The result of various trial taken result given in table 10.9.

Carr's Index or % Compressibility

It indicated powder flow properties. It is measured for determining the relative importance of interparticulate interactions. It is calculated by following formula.

Compressibility Index;- [(Tapped density- Bulk density) / Tapped density] x100.

Hausner's ratio:

Hausner's ratio is an indirect index of ease of powder flow. Hausner's ratio was measured by the ratio of tapped density to bulk density.

Hausner's ratio;- Tapped density/ Bulk density.

Table 2: Standard values of powder flow properties

FLOW PROPERTY	ANGLE OF REPOSE	COMPRESSIBILITY INDEX	HAUSNRES RATIO
Excellent	25-30	<10	1.00-1.11
Good	31-35	11-15	1.12-1.18
Fair	36-40	16-25	1.19-1.25
Passable	41-55	21-25	1.26-1.34
Poor	46-55	26-31	1.35-1.45
Very poor	56-65	32-37	1.46-1.59
Very Very poor	<65	<38	<1.60

Evaluation of Floating Tablets (Post-Compression Studies)

General Appearance

General appearance of the tablets from each formulation batch was observed the general appearance parameters are shape, color, presence or absence of odour and taste.

Weight Variation Test:

Twenty tablets were selected at random and average weight was determined. Then individual tablets were weighed and the individual weight was compared with an average weight. The result of given in table no 10.10

Table 3: IP standards of Uniformity of weight

Sr. No	Avg. Wt. of Tablet(mg)	% of Deviation
1	≤80 mg	10
2	>80 mg – 250 mg	7.5
3	<250 mg	5

Hardness:

The resistance of tablets to shipping or breakage under condition of storage, transportation and handling before usage depends on its hardness. The hardness of each batch of tablet was checked by using Monsanto hardness tester. The hardness was measured in the terms of kg/cm², 6 tablets were chosen randomly and tested for hardness. The average hardness of 6 determinations was recorded. The result of given in table no 10.10

Tablet thickness:

Thickness of the tablet is important for uniformity of tablet size. Thickness was measured using Vernier Calipers. It was determined by checking the thickness of ten tablets of each formulation. Vernier calipers consists of metric and imperial scales. The main matric scale is read first then read "hundredths of mm" of imperial scale (count the number of division until the lines concedes with the main metric scale. The imperial scale number is multiply with 0.02. Then that number obtained from imperial scale added with main metric scale to get final measurement. The result of given in table no 10.10

Friability:

Friability generally refers to loss in weight of tablets in the containers due to removal of fines from the tablet surface. Friability generally reflects poor cohesion of tablet ingredients, 10 tablets were weighed and the initial weight of these tablets was recorded and placed in Roche friabilator and potated at the speed of 25 rpm for 100 revolutions. Then tablets were removed from the friabilator the fines and again weighed and the weight was recorded. Percentage friability was calculated by using the formula. The result of given in table no 10.10

% Friability = Weight initial-Weight final /Weight initial *100

Drug Content for Floating Tablet of Metoprolol succinate

10 tablets of each formulation were weighed and taken in a mortar and crushed to powder. A quantity of powder equivalent to 100mg of Metoprolol Succinate was accurately weighed and transferred to a 100ml volumetric flask and 0.1N HCl solution was added and mixed thoroughly. The solution was made up to volume 100ml and filtered. Dilute 1ml of the resulting solution to 10ml with 0.1N HCl solution. The absorbance of resulting solution was measured at 222.5nm using a UV-visible spectrophotometer. The result of given in table no 10.10

Swelling Index

The extent of swelling can be measured in terms of % weight gain by the tablet. Swelling studies were carried out for formulations and from each formula, one tablet was weighed individually and placed separately in petri dish containing 15 ml of 0.1 N HCI. After 5 hrs the tablets were removed from petri dish and the excess surface liquid was removed carefully using tissue paper. The swollen tablets were then reweighed swelling index (SI) was calculated using formula the result of given in table no 10.11

$$\% \text{ SI} = \frac{\text{Weight of the swollen tablet} - \text{Initial weight of the tablet}}{\text{Initial weight of the tablet}} \times 100$$

In-vitro buoyancy determination

Buoyancy Floating Test was done by tablets were placed in a 100mi beaker containing 0.IN HCl as the dissolution medium at 37^0C. The time required for the tablet to rise to the surface and float was determined as floating lag time and total floating time. Total floating time for the formulations containing HPMC E5 with Gum Karaya were maintained their matrix integrity for 12 hours shown in Table 10.12

Floating Lag Time (FLT) or Buoyancy Lag Time (BLT): The time taken for dosage form to emerge on surface of medium.

Total Floating Time (TFT): Total duration of time by which dosage form remain buoyant.

In -Vitro Dissolution Study for Floating tablets

Details of Dissolution Test:

Apparatus	:	USP Type-II (Paddle)
Volume of medium	:	900 mL
Temperature	:	37± 0.5°C
Speed	:	50 rpm
Dissolution medium used	:	0.1N HCl
Aliquot taken at each time interval 5 ml	:	5 ml
Time	:	1, 2, 4, 6, 8, 10 upto 12 Hrs.
Filter	:	whatmann filter paper

In vitro drug release studies were carried out using the USP Type II Dissolution test apparatus (Electrolab Model TDT-08L) set with a paddle speed of 50 rpm. Dissolution was performed in 900 ml of 0.1N HCI maintained at 37± 0.5°C. The tablet of Metoprolol Succinate was taken in vessel of dissolution apparatus, the paddle was rotated at 50 rpm. The 5 ml sample was withdrawn at predetermined time interval and an equivalent amount of fresh dissolution fluid equilibrated at the same temperature was replaced and the sample was diluted suitably with dissolution medium. The solution was filtered through Whatmann filter paper. The filtrate was analyzed by UV-Visible spectrophotometer. The data is given in Table No.10.13

RESULTS AND DISCUSSION

PREFORMULATION STUDY

These tests were performed as per procedure given in the results were illustrated in table.

Identification and Characterization of Metoprolol Succinate

Table No 4: Identification and Characterization of Metoprolol Succinate

Test	Specification	Observation	Inference
Color	White	White	Complies as per IP
Odor	Odorless	Odorless	Complies as per IP
Taste	Bitter	Bitter	Complies as per IP
Melting Point	120 ^{0}C	118-121 ^{0}C	Complies as per IP

UV-Spectroscopic Analysis of Drug

The prepared standard solution of Metoprolol Succinate in 0.1N HCI scanned between 200- 400nm in UV spectrophotometer showed maximum absorbance in 222.5nm which was chosen as the working ʎ max. The spectrum of Metoprolol Succinate shown in Figure 10.1

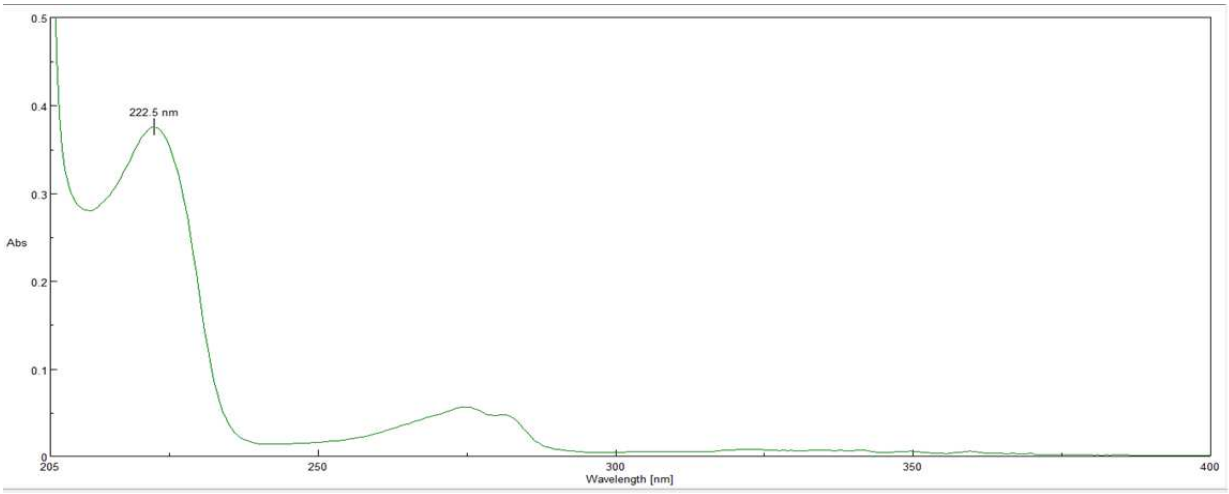

Fig. 1 UV Spectrum of Metoprolol Succinate in 0.1 N HCI

1. Standard Calibration Curve of Metoprolol Succinate

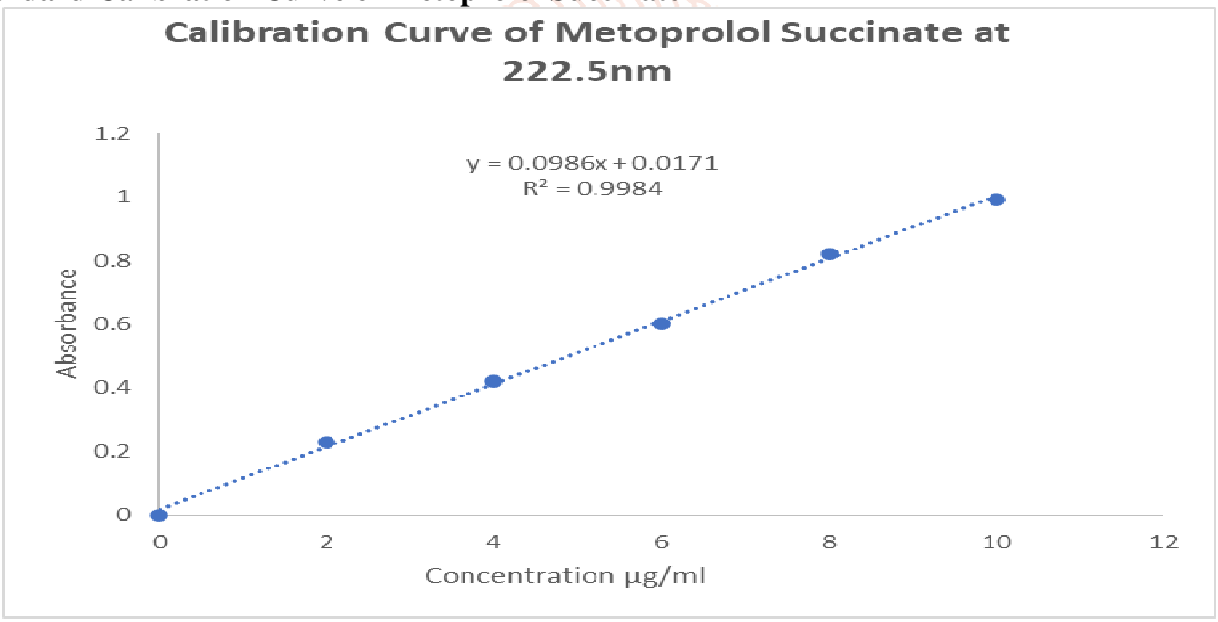

Fig 1: Standard Calibration Curve of Metoprolol Succinate

Calibration curve of Metoprolol Succinate was performed in 0.1N HCl found to be linear in the concentration range of 2-10 ug/ml having coefficient of regression (R^2) value for 0.1N HCI was 0.9984 which showed a linear relationship between concentration and absorbance.

Table.5 Standard Calibration Curve of Metoprolol Succinate in 0.1N HCl

Sr. No	Concentration (µg/ml)	Absorbance
1	0	0
2	2	0.23
3	4	0.42
4	6	0.6
5	8	0.82
6	10	0.99

FT-IR spectrum of Metoprolol succinate

1. IR Spectrum of Metoprolol Succinate standard

The Fourier transform infrared spectroscopy (FTIR) spectrum of Metoprolol Succinate was studied

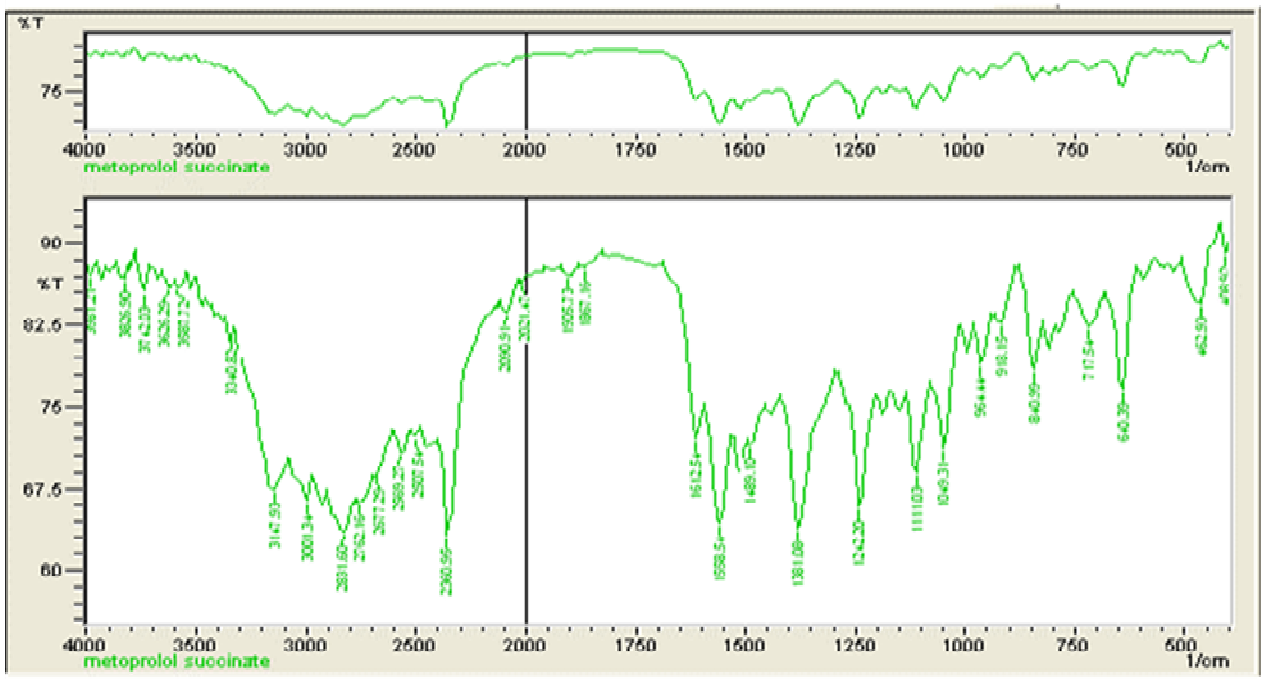

Fig.2: FT-IR spectrum of Metoprolol Succinate

Table.6: IR frequencies of Metoprolol Succinate

Sr.no	Reference Peak Wavenumber (cm^{-1})	Observed Peak Wavenumber (cm^{-1})	Functional Group
1	3300-3400	3340.82	N-H Stretching of secondary amine
2	1000-1300	1242.20	C-O Stretching
3	2690-2840	2831.60	C-H Stretching
4	2500-3300	2507.54	O-H Stretching

2. Drug-Excipients compatibility Studies by using FTIR

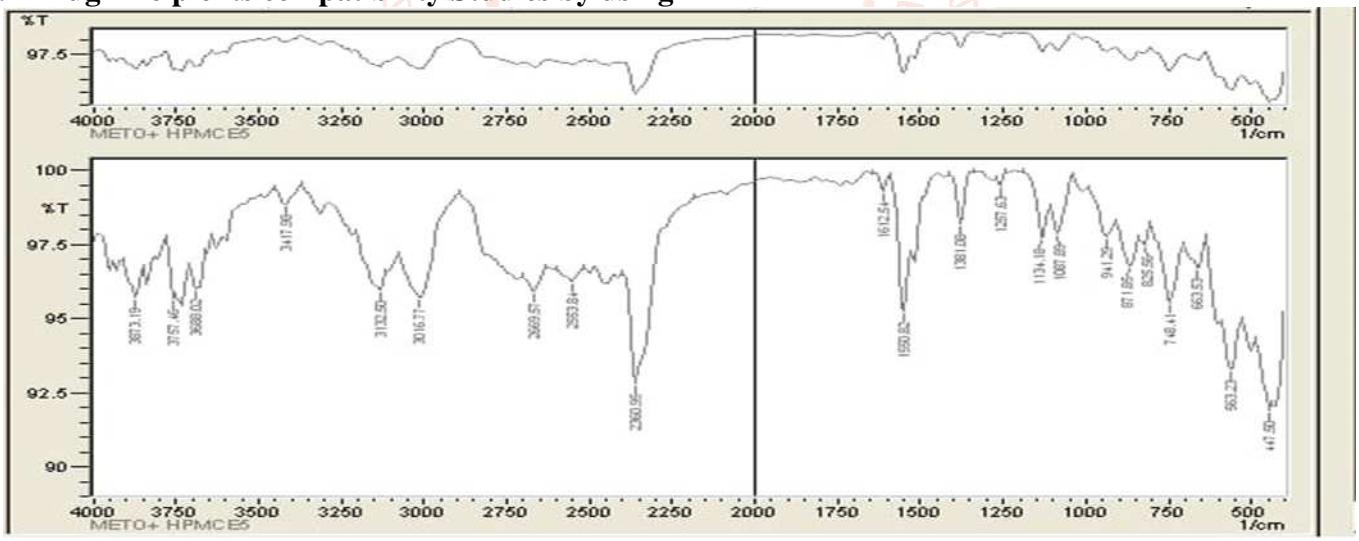

Fig.3: FT-IR spectrum of Metoprolol Succinate + HPMC E5

Table.7: IR frequencies of Metoprolol Succinate + HPMC E5

Sr.no	Reference Peak Wavenumber (cm^{-1})	Observed Peak Wavenumber (cm^{-1})	Functional Group
1.	3050-3000	3132.50	N-H 2^0 Amines
2.	2850-3000	3016.77	CH_3,CH_2 and CH
3.	1350-1470	1381.08	-CH2 Stretching
4.	1889-158	1550.82	C-C Stretching

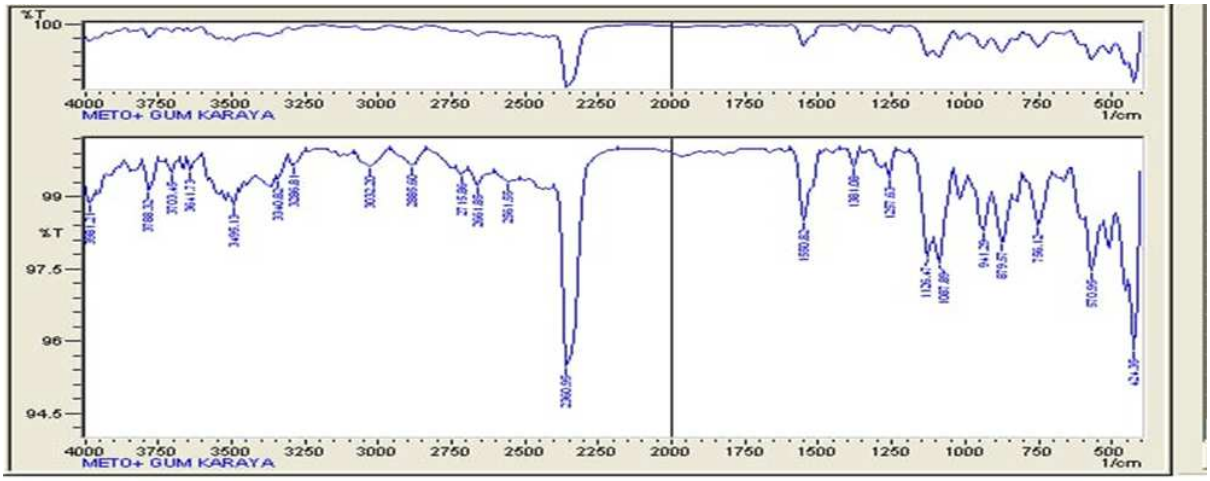

Fig.4: FT-IR spectrum of Metoprolol Succinate + Gum Karaya

Table.8: IR frequencies of Metoprolol Succinate + Gum Karaya

Sr. No.	Reference Peak Wavenumber (cm^{-1})	Observed Peak Wavenumber (cm^{-1})	Functional Group
1.	1254-1731	1550.82	Acetyl group
2.	970-1250	1257.63	O-H Stretching
3.	1350-1470	1381.08	CH_2-CH_3

The peaks of drug excipient compatibility study compare with IR spectra of Metoprolol Succinate, it indicate no chemical changes between drug excipient compatibility and Metoprolol Succinate. It was concluded that there is no interaction between drug and excipients.

EVALUATION OF FLOATING TABLETS OF METOPROLOL SUCCINATE (POST COMPRESSION STUDIES)

The Floating tablets of Metoprolol Succinate were evaluated for Post Compression Parameter like weight variation test, friability, thickness, hardness and drug content.

Table no 9. Post-Compression Parameter of floating tablet of Metoprolol Succinate

Formulation Code	Weight variation (n=20) (mg±SD)	Hardness (kg/cm^2 ±SD)	Friability (%)	Thickness (%± SD)	Drug Content (%)
F1	298.89±0.23	5.9±0.44	0.59±0.59	4.14±0.15	94.48±0.42
F2	299.88±0.41	6.2±0.26	0.68±0.32	4.25±0.34	95.65±0.44
F3	297.82±0.13	6.3±0.34	0.58±0.26	4.23±0.37	98.32±0.26
F4	299.87±0.42	5.9±0.49	0.59±0.29	4.19±0.28	98.24±0.34
F5	298.90±0.55	6.3±0.33	0.62±0.36	4.16±0.55	99.72±0.55
F6	299.85±0.57	6.1±0.24	0.59±0.47	4.23±0.37	99.86±0.55

Weight Variation

All the formulated (F1to F6) tablets passed weight variation test as the % Weight variation was with in the pharmacopeia limit of +5% of the weight. The weight of all the tablets were found to be uniform with low standard deviation values.

Hardness

The measured hardness of tablets of each batch ranged between 5.0 to 6.00 Kg/cm2. This ensures good handling and transportation of all tablets.

Tablet Thickness

The measured Thickness of tablets of each batch ranged between 4.1 to 4.25 mm. This ensures good handling and transportation of all tablets.

Friability

The % Friability was less than 1% in all formulations ensuring that the tablets were mechanically stable..

Drug Content (%)

The percentage of Drug content for F1 to F6 was found to be between 94.4% to 99.1% of Metoprolol Succinate it complies with official specifications.

Swelling Index of Floating Tablet of Metoprolol Succinate

The Swelling index of different formulation was determined and results are given as follows:

Table No 10: Swelling Index for Floating Tablet.

Time (hr)	Formulation					
	F1	F2	F3	F4	F5	F6
Initial weight(gm)	0.29	0.28	0.28	0.27	0.28	0.30
Final weight(swollen) after 5 hrs	0.34	0.37	0.38	0.31	0.35	0.39
Swelling index(%)	17.24	32.14	35.710	14.81	25.00	30.00

Swelling index of all formulations was done and it measured in terms of percentage weight by the tablet. It was found that formulations FI-F6 having good swelling property for prolongation of drug release.

Figure 5: Swollen Tablet after 5hrs

In- Vitro Buoyancy Determination

The In-Vitro buoyancy determination of different formulation was determined and the results are given as follows.

Table.11: In- Vitro Buoyancy Determination

Sr. No.	Batch Code	Floating lag Time (min)	Total Floating time (hr)
1	F1	18	8 hrs
2	F2	14	8 hrs
3	F3	7	12 hrs
4	F4	5	9 hrs
5	F5	6	10 hrs
6	F6	4	12 hrs

Fig No: 6 in vitro buoyancy study of Metoprolol Succinate floating tablet

The In-Vitro buoyancy determination of different formulation was determined by analysis of parameters like Floating lag Time (minutes) and floating time over gastric fluid. All formulations a good floating behavior with floating lag time ranging from 4 to 18 min and floating period between 12 hr. Both floating lag time and total floating time increases with increase in concentration of polymers.

Invitro Drug Release Study of Formulated Floating Sustained Release Formulations

Table 12: Invitro Drug Release Study

TIME(hr)	CUMULATIVE PERCENTAGE DRUG RELEASE (%)					
	F1	F2	F3	F4	F5	F6
0	0	0	0	0	0	0
1	32.72	29.2	30.22	29.3	27.13	33.34
2	50.39	55.74	54.29	37.24	35.36	45.78
4	66.39	69.01	64.7	53.86	54.2	55.85
6	74.75	83.59	70.49	70.27	67.86	66.75
8	91.06	92.95	83.42	90.99	74.92	83.42
10	-	-	91.82	-	91.23	87.19
12	-	-	93.17	-	-	96.15

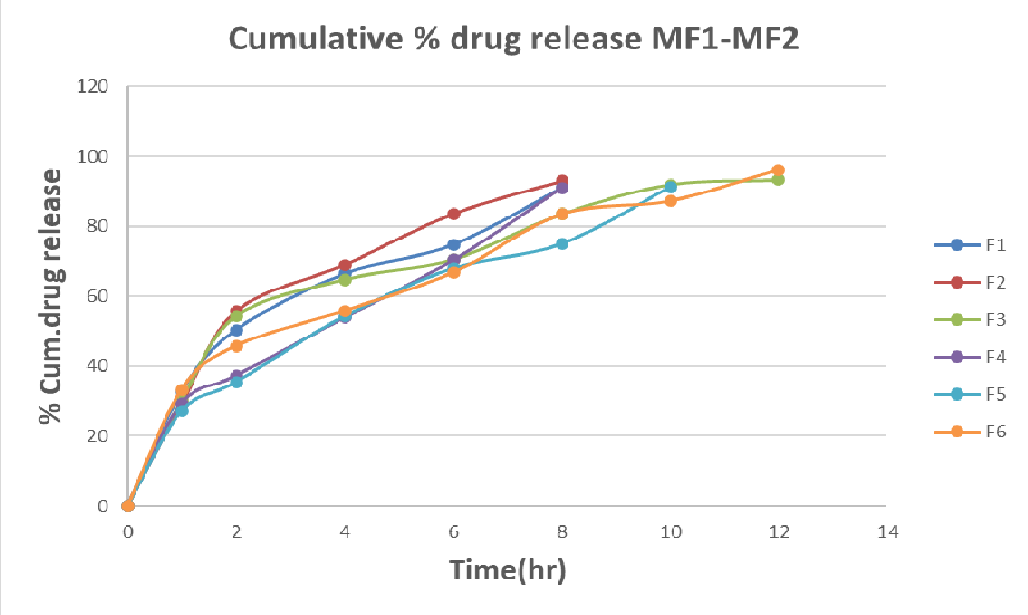

Fig.7. In-vitro Drug Released Study of Metoprolol Succinate Sustained release tablet

Sustained release tablets of Metoprolol Succinate were prepared by using HPMC E5 and Gum karaya polymers. The release profiles of Metoprolol succinate Sustained Released tablet were plotted as in fig.10.11. The release rate of Metoprolol succinate mainly sustained by the hydration and swelling properties of polymers. The use of Sodium Bicarbonate and Citric acid forms effervescence that make tablet floats over gastric fluid for 12 hrs. The effect of polymer concentration on drug release could be clearly seen from the variation of dissolution profiles. It was found that drug release from composed of HPMC E5 in high concentration was 12 hr and also shows significantly higher drug release rate than other formulations. Formulation F6 containing 300 mg of HPMC E5 and sustained drug released for relatively 12 hr. and shows 96.15% cumulative drug release which comparatively greater than other formulation batches so F6 was selected for further formulation of Floating tablet of Metoprolol succinate.

CONCLUSION

Metoprolol Succinate is a BCS class I drug used in the treatment of Angina pectoric, Heart attack, Hypertension and has short half life (3-7hours). In the present study it was planned to prepare sustained release floating tablets of Metoprolol succinate by using HPMC E5 and Gum Karaya excipients. The procured sample of drug was authenticated by pre-formulation study like melting point, IR spectra, UV analysis were done. Results of pre-formulation studies show that Metoprolol Succinate was pure and complies with standard. Prior to compression, the powder blend were evaluated for angle of repose, bulk density, tapped density, compressibility index, Hausner's ratio. Results of pre-formulation studies show that Metoprolol Succinate was pure and complies with standard. Formulations were evaluated for various evaluation parameters like hardness, thickness, weight variation, friability, drug content, floating lag time, floating time, swelling index and in vitro drug release. From the results of evaluation parameters it was observed that formulation F6 shows best results for floating lag time 4min floating time up to 12 hours and consistent drug release 96.15 % as compared to other formulations. So formulation F6 was finalized as a optimized formulation for further study. On the basic of above finding it was concluded

that sustained release floating drug delivery system was successfully achieved.

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