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FORMULATION OF DEFERASIROX INTO DISPERSIBLE TABLET FOR THE TREATMENT OF CHRONIC IRON OVERLOAD

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ABSTRACT

The present investigation was undertaken to formulate Deferasirox dispersible tablet for the treatment of chronic iron overload. For the development and formulation of dispersible tablets, wet granulation techniques were carried out. Various approved excipients like cross carmelose sodium and sodium starch glycolate as superdisintegrants, Microcrystalline cellulose pH101 as hydrophilic diluents and sodium lauryl sulphate as surfactant to increase solubility, polyvinyl pyrrolidone as binding agent magnesium stearate and Aerosil as lubricant and glidant were selected. All the experimental formulation batches have been subjected to various evaluation parameters viz, average weight, thickness, hardness, friability, disintegration, uniformity of dispersion, dissolution studies, water content and assay. All the formulations were subjected to physicochemical analysis and out of them Formulation DF4 was found to be satisfactory when compared to other formulations. The disintegration time (30 sec), dispersion time (60 sec) and percentage of drug release (100.08 %) were found to be satisfactory and it matches with the market sample. Finally loaded for stability as per the ICH guidelines.

KEYWORDS

Deferasirox dispersible tablet, Chronic iron overload, Wet granulation technique and ICH guidelines.

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INTRODUCTON

Chelating agents were introduced into medicine as a result of the use of poison gas in World War I. The first widely used chelating agent, the organic dithiol compound dimercaprol (also named British anti-lewisite or BAL), was used as an antidote to the arsenic-based poison gas, Lewisite. Several chelating agents are available, having different affinities for different metals. Common chelating agents include: Alpha lipoic acid (ALA), Aminophenoxyethane-tetraacetic acid (BAPTA), Deferasirox, Deferiprone,

Deferoxamine, (Table No.1), Diethylenetriaminepenta acetic acid (DTPA), Dimercaprol (BAL), Dimercapto-propane sulfonate (DMPS), Dimercaptosuccinic acid (DMSA), Ethylenediamine tetra acetic acid (calcium disodium versante) ($CaNa_2$-EDTA), Ethylene glycol tetra acetic acid (EGTA), D-penicillamine[1,2].

Iron overload is the result of many disorders and can lead to the development of organ damage with increased mortality. In humans total body iron concentration is maintained within the range of 200-1500 mg by inadequate adjustment of intestinal absorption, since no excretory mechanisms exist. Each condition that induces an increased net entry of iron within the body inevitably leads to iron overload. The toxicity of iron results from two related events: 1) excess iron concentration in various tissues of the body, particularly in liver, heart and endocrine organs with the consequence of liver diseases, diabetes mellitus and other complications, and 2) free iron that catalyzes the formation of highly reactive hydroxyl radicals which lead to membrane damage and denaturation of proteins. Once iron exceeds a certain level, these effects lead to significant morbidity and mortality[3].

The aim of treatment of iron storage disease is to remove from the body the excess iron that has accumulated. This can be done by employing iron chelators. Iron chelation therapy reduces iron-related morbidity, reduces and retards liver diseases, diabetes and other endocrine failures, normalizes growth and sexual development, prevents, and in some cases reverses, cardiac insufficiency and improves quality of life. Consequently iron chelation therapy dramatically reduces mortality[4].

Deferasirox is a new once-a-day oral iron chelating agent (selective for iron as Fe3+) for iron overload in patients 2 years of age and older that was approved by the US Food and Drug Administration in November 2005. It is a tridentate ligand that binds to iron with high affinity in a 2:1 ratio. It works in treating iron toxicity by binding trivalent (ferric) iron (for which it has a strong affinity), forming a stable complex which is eliminated via the kidneys. Deferasirox is practically insoluble in water, freely soluble in Dimethyl formamide, Dimethyl sulfoxide and slightly soluble in methanol[5, 6].

Dispersible tablets as defined in Ph. Eur. are uncoated or film coated tablets intended to be dispersed in water before administration giving a homogeneous dispersion. Dispersible tablets are required to disintegrate within 3 minutes in water at 15-25 °C. Also the dispersion produced from a dispersible tablet should pass through a sieve screen with a nominal mesh aperture of 710 microns[5].

The objective of present study is to design and develop a stable solid oral dosage form of Desferasirox dispersible tablets to deliver with optimum concentration of drug at desired site at specific time comparable to the market sample product with better stability, high production feasibility, and excellent patient compatibility.

MATERIALS AND METHODS

Materials

Deferasirox was procured as gift sample from Natco Pharma Ltd, Hyderabad. Sodium starch glycolate was obtained from S.D.Fine Chemicals. MCC PH 101 and sodium saccharin from Signet Chemical Corporation, Mumbai. Aerosil and Magnesium stearate from Ranbaxy fine chemicals, New Delhi and all other chemicals and reagents were of analytical grade.

Pre-formulation studies

Drug-excipient compatibility studies

The study was carried out to establish that the therapeutically active drug has not undergone any changes, after it has been subjected to processing steps during formulation of tablets. Compatibility studies were carried out by mixing definite proportions of drug and excipient and kept in glass vials, which are stored at 55°C (2 weeks) and 40±2°C/75±5 % RH(4 weeks)[7].

Pre-compression parameters

Angle of repose

The internal angle between the surface of the pile of blend and the horizontal surface is known as the angle of repose[8, 9].

The blend was passed through a funnel fixed to a burette stand at a height of 4 cm. A graph paper was placed below the funnel on the table. The height and

radius of the pile was measured. Angle of repose of the blend was calculated using the formula:

Angle of repose (θ) = $\tan^{-1}$ (h/r)

Where, h = Height of the pile. r = Radius of the pile.

Bulk density

The bulk density is used as a measure to describe packing materials or granules.

Bulk density is the ratio of given mass of powder and its bulk volume. It was determined by transferring an accurately weighed amount (25 gms) of powder sample to the graduated cylinder with the aid of a funnel. The initial volume was noted. Ratio of weight of the sample to the volume it occupied was calculated[10].

Bulk density= W/ V_0 g/m

Where,

W = Mass of the blend, V_0 = Untapped volume.

Tapped density

It was measured by transferring a known quantity (25 gms) of blend into a graduated cylinder and was placed on the tapped density apparatus. The initial volume was noted. The apparatus was set for 500, 750 and 1250 taps. The tapped density was determined as the ratio of mass of the blend to the tapped volume[10].

Tapped density=W/ V_f g

Where,

W= Mass of the blend, V_f = tapped volume.

Compressibility index

It is measured by tapped density apparatus for 500, 750 and 1250 taps for which the difference should be not more than 2 %. Based on the apparent bulk density and tapped density the percentage compressibility of the blend was determined using the following formula[10].

Compressibility index= [($V_0 – V_f$) / V_0] X 100

(or)

% Compressibility = [(Tapped density – Bulk density) / Tapped density] X 100.

Hausner's ratio

It indicates the flow properties of the powder. The ratio of tapped density to the bulk density of the powder is called Hausner's ratio[10].

Hausner's ratio= Tapped density / Bulk density.

Loss on drying

The Loss on drying test is designed to measure the amount of water and volatile matters in a sample when the sample is dried under specified conditions. The loss on drying of the blend (1g) was determined by using electronic LOD (helium lamp) apparatus at 105°C[10].

Evaluation parameters of Dispersible tablets

Physical appearance

The tablets were inspected for smoothness, absence of cracks, chips and other undesirable characteristics. If they are colored, it includes examination for mottling and other evidence of non-uniform color distribution except where they are used intentionally.

Weight variation test

20 tablets were randomly selected from each formulation and their average weight was calculated using digital balance. Individual weight of each tablet was also calculated using the same and compared with the average weight[10].

Hardness

The hardness test is performed to measure the tablet strength. Tablet should be hard enough to withstand packing and shipping. Schluenzier hardness tester was used for the determination of hardness of tablets. The hardness of 10 tablets was noted and the average hardness was calculated[8]. It is expressed in kp or kg/cm^2.

Thickness

Thickness was determined for 20 pre weighed tablets of each batch using a digital vernier scale and the average thickness was determined in mm. The thickness of the tablet is mostly related to the tablet hardness and can be used as an initial control parameter[10].

Percentage Friability

The friability test gives an indication of tablets ability to resist chipping and abrasion on handling during packaging and shipping. Usually for conventional tablets friability value of 1.0% or less is desirable. If the tablet weight is $\geq$ 650 mg 10 tablets were taken and initial weight was noted. The tablets were rotate in the Roche friabilator for 100 revolutions at 25 rpm. The tablets were dedusted and reweighed.

The tablets that loose less than 1% weight were considered to be compliant.

The percentage friability is expressed as the loss of weight and is calculated by the formula:[10]

% Friability = (A-B/B) × 100

Where,

A = Initial weight of tablets, B = Final weight of tablets after 100 revolutions.

Uniformity of dispersion

This test was applicable only to dispersible tablets. In this method, two tablets were placed in 100 ml of water and stirred gently until completely dispersed. A smooth dispersion must be obtained which passes through a sieve screen with a nominal mesh aperture of 710 µm (sieve no. 22)[11].

Disintegration time

Disintegration time is the time required for a tablet to break up into granules of specified size (or smaller), under carefully specified test conditions. The disintegration test is carried out in an apparatus containing a basket rack assembly with six glass tubes of 7.75 cm length and 2.15 mm in diameter the bottom of which consists of a 10 mesh sieve. The basket is raised and lowered 28-32 times per minute in the medium of 900 ml which is maintained at 37±2°C. Six tablets were placed in each of the tubes and the time required for complete passage of tablet fragments through the sieve (# 10) was considered as the disintegration time of the tablet. This test is performed to ensure disintegration of tablets in water, if it is to be used as a dispersible tablet. Dispersible tablets must disintegrate within 3 mins when examined by the disintegration test for tablets as per the compliance in the pharmacopoeia[11].

Dissolution study (By UV method)

The dissolution test measures the rate of release of the drug from the dosage form *in vitro*, it is usually expressed as extent of dissolution (% drug content) occurring after a given time under specified conditions. For effective absorption of oral solid dosage form, simple disintegration of the dosage form is not adequate and the dissolution of the drug into the surrounding medium plays a vital role. Though dissolution is not a predictor of therapeutic efficacy it can be looked upon a tool which can provide valuable information about biological availability of drug and batch to batch consistency. Dissolution is considered as one of the most important quality control tests performed for pharmaceutical dosage form.

Dissolution conditions

Medium : pH 6.8 phosphate buffer containing 0.5 % tween-20.
Volume : 900 ml
Temperature : 37°C ± 0.5°C
Apparatus : USP Type-II (Paddle)
rpm : 50
Time intervals **:** 10, 20, 30 and 45 mins.

Procedure

The *in vitro* dissolution study was carried out in the USP dissolution test apparatus, type II (paddle). One tablet was placed in each of the six dissolution flasks containing 900 ml of dissolution medium, previously maintained at 37°C ± 0.5°C.

After completion of each specified time interval, a portion of the solution was withdrawn from zone midway between the surface of the dissolution medium and top of the rotating blade, not less than 1 cm from vessel wall and filtered through 0.45 µm membrane filter. The samples were collected at specified time intervals and diluted to required volume with dissolution medium.

The absorbance of the standard and sample preparations were measured in 1 cm cells, with a suitable spectrophotometer using dissolution medium as blank preparation. Finally the % drug dissolved of Deferasirox tablets was calculated[8].

Assay (By HPLC method)

Instrument

High performance liquid chromatography equipped with UV Detector and data handling system.

Chromatographic conditions

Column **:** Develosil ODS HG-5 (150×4.6mm) 5µm
Flow rate **:** 1.5 ml/min
Injection volume **:** 10 µl
Column temperature: 40°C
Runtime **:** 15 mins.

Preparations

Mobile phase preparation

1.58 g of Ammonium dihydrogen orthophosphate was accurately weighed into a 1000ml beaker. To that 550 ml of purified water was added and mixed. The pH of the solution was adjusted to 2.5 using ortho-phosphoric acid. This solution and acetonitrile were mixed in the ratio of 550:450 respectively. Finally the solution was filtered using 0.45 µm membrane filter paper and degas.

Diluent preparation

Acetonitrile and methanol were mixed in the ratio of 50:50 v/v respectively.

Standard preparation

40 mg of Deferasirox working standard was accurately weighed and transferred into a 100 ml volumetric flask. Then 60 ml of diluent was added and was dissolved by sonication. The solution was cooled to the room temperature and diluted to the required volume with diluent.

2 ml of the above solution was transferred into a 100 ml volumetric flask and diluted to the required volume with diluent.

Sample preparation

20 tablets were accurately weighed and finally powdered. From this powdered tablet equivalent to 400 mg of Deferasirox was weighed and transferred into a 250 ml volumetric flask, to this 180 ml of the diluent was added and sonicated for 30 mins with occasional stirring. Then the solution was cooled to room temperature and diluted to the required volume with diluent. The solution was filtered through 0.45 µm membrane filter. 1.0ml of the above filtered solution was transferred into a 200 ml volumetric flask and diluted to the required volume with diluent.

Procedure

Equal volumes (10 µl) of the diluent as blank, standard preparation and sample preparations were injected separately into the chromatograph, the chromatograms were recorded and the peak area responses for the major peaks were measured. Finally the percentage content of Deferasirox in the portion of the Deferasirox tablets was calculated[8].

$$\% \text{ Content of Deferasirox} = \frac{TA \times SW \times 2 \times 250 \times 200 \times P \times Avg.wt \times 100}{SA \times 100 \times 100 \times TW \times 1 \times 100 \times LA}$$

Where,

TA = Peak area response due to Deferasirox from sample preparation.

SA = Peak area response due to Deferasirox from standard preparation.

SW = Weight of Deferasirox working standard taken in mg.

TW = Weight of sample taken in mg.

P = Purity of Deferasirox working standard.

Avg. wt = Average weight of Deferasirox tablet taken in mg.

LA = Label amount of Deferasirox.

Water content (By KF Method)

Instrument: Karl Fischer titrator

35 ml of a mixture of methanol was transferred to the titration vessel and titrated with Karl Fischer reagent to the electrometric end point, to consume any moisture that may be present (disregard the volume consumed, since it does not enter into the calculation).

Powder from 5 tablets was used, ground to a fine powder in an atmosphere of temperature and relative humidity known not to influence the results. 300-500 mg of the powder was accurately weighed and transferred into the titration vessel, mixed and titrated with Karl Fischer reagent to the electrometric end point. Finally the water content of the specimen in mg was calculated.

Stability studies

The purpose of stability testing is to provide evidence of the quality of the drug substance or drug product, and how it varies with time under the influence of a variety of environmental conditions (heat, humidity, light, air etc).

The final formulation was packed in suitable packing like blister and strip packs and then they will be kept at different temperature, humidity conditions and the samples will be analyzed for their physical and chemical properties[12].

The formulation is subjected to

- Long term testing at 25±2°C and 60±5 % RH for 12 months.

- Accelerated testing at 40±2°C and 75±5 % RH for 6 months.

Formulation Development of Deferasirox Dispersible Tablets

Wet granulation method (Table No.2)

Procedure for wet granulation (F-2 to DF4)

- API, MCC PH 101, sodium saccharin, MCC PH 101 Cross carmellose sodium or sodium starch glycolate and SLS, were weighed and mixed for 5 mins.
- The above mixture was passed through #60 mesh.
- Povidone K30 was dispersed in sufficient quantity of purified water by stirring.
- Then the above mixture was granulated using binder solution (Povidone K30 and water).
- The wet mass was passed through #10 mesh.
- The sieved mixture was dried using FBD and the temperature was maintained at 60°C until the moisture content in the blend comes to less than 1.0 %.
- The dried blend was passed through # 18mesh and then pre lubricated using Aerosil for 5mins and then lubricated with Magnesium stearate in blender for 2 mins.
- Then finally the lubricated blend was compressed using 15 mm round flat punches.

RESULTS AND DISCUSSION

Pre-formulation studies

Drug-excipient compatibility studies

Compatibility studies were conducted for drug, excipients in separate as well as in combination of different proportions at different temperature conditions for two weeks and for four weeks (Table No.3). Here the external appearance of tablets was considered as the criteria i.e. color. After four weeks of studies all the combinations which are undergone for testing evaluated for appearance. And all the formulations showed no change in color during studies.

FT-IR Studies

After optimization of formulation, FT-IR studies were conducted to the optimized formulation to find out the interaction between drug and excipients with in the formulation. Here the sample of pure drug and physical mixture of formulation were undergone for this study after three months of storage. From the obtained spectrums of both pure drug as well as physical mixture it was concluded that there is no interaction is found between the drug and excipients. Because the peaks which are observed in pure drug spectrum, were also observed in the spectrum of physical mixture (Figure No.4 and 5).

Standard graph of deferasirox in 6.8 phosphate buffer

The standard graph of deferasirox in 6.8 phosphate buffer was developed in the concentration range of 2 – 20 ug/ml with suitable dilutions. And observed under UV- spectrophotometer at a absorption max of 245 nm. The standard graph of deferasirox in 6.8 phosphate buffer showed a good linearity with R^2 of 0.9997, and the equation of graph is $y = 0.0558x + 0.0183$ (Table No.7 and Figure No.1).

DISCUSSION

All the experimental formulation batches have been subjected to various evaluation parameters viz, average weight, thickness, hardness, friability, disintegration, uniformity of dispersion, dissolution studies, water content and assay (Table No.4,5 and 6).

Formulation DF1 was carried out by wet granulation technique. Here Povidone K30 was used as a binder which was dispersed in water to make a solution. MCCPH 101 was used as a diluent. Cross carmellose sodium was used Superdisintegrants. Sodium saccharin was used as sweetening agent. Aerosil and magnesium stearate were used as glidant and lubricant respectively. Here hardness and the friability values were found satisfactory. The disintegration time and dispersion time were found to be 60 and 116 sec respectively. The percentage of drug release was 50.68 % (in 45 mins) and it was found to be less when to compare with the market sample product (Table No.8 and Figure No.2).

Formulation DF-2 was carried out by using sodium starch glycolate as superdisintegrant for better disintegration and dispersion. Sodium lauryl Sulphate (SLS) were added for better dissolution of the tablet. Improvement in the hardness was observed. Dissolution does not comply with the market sample product. The percentage of drug release was found to

be 92.98 % (in 45 mins) which was still less compared to market sample.

Formulation DF3 was carried out by using the same excipients as that of the previous batch. Here the concentration of SLS was increase from 6mg/tablet to 8 mg/tablet and superdisintegrant concentration was raisedfrom 50 mg/tablet to 75mg/tab. The disintegration time and dispersion time were found to be 38 and 80 sec respectively. The percentage of drug release was 96.35 % (in 45 mins) and it can be further increased to comply with the market sample product.

Formulation DF4 was performed by using the same formula of the previous batch but by increasing the concentration of surfactant and superdisintegrant. The disintegration time (30 sec), dispersion time (60 sec) and percentage of drug release (100.08 % in 45 mins) matches with that of the market sample (ASUNRA). Then the formulated tablets were loaded for stability as per ICH guidelines (Table No.9 and 10 and Figure No.3).

Table No.1: Available Iron-Chelating Agents used for the Treatment of Iron Overload

S.No	Agent	Brand name (Manufacturer)	Pharmacology	Route of Administration
1	Deferasirox	Exjade (Novartis)	Tridendate molecule; 2:1 stoichiometry for iron	Oral
2	Deferiprone	Ferriprox (Apotex)	Bidentate molecule; 3:1 stoichiometry for iron	Oral
3	Deferoxamine	Desferal (Novartis)	Hexadentate molecule; 1:1 stoichiometry for iron	IV

Table No.2: Formula for DF1 to DF4

S.No	Ingredient (mg)	DF1	DF2	DF3	DF4
1	Deferasirox	400	400	400	400
2	MCC PH 101	340	329	306	304
3	Sodium starch glycolate	-	50	75	125
4	Cross carmellose sodium	50	-	-	-
5	Povidone K 30	40	45	45	45
6	SLS	-	6	8	10
7	Sodium saccharin	8	8	8	8
8	Aerosil	4	5	6	6
9	Magnesium stearate	8	8	8	8
10	Avg.wt.	850	850	850	850

Table No.3: Drug-excipient compatibility studies

S.No	Ingredients	Ratio	Description		
			Initial	55°C (2 weeks)	40±2°C /75±5 % RH (4 weeks)
1	API	1	Off white	No change	No change
2	MCC PH 101	1	Off white	No change	No change
3	Cross carmellose sodium	1	White	No change	No change
4	Starch 1500	1	White	No change	No change
6	SLS	1	White	No change	No change
7	Povidone K30	1	Off white	No change	No change
8	Aerosil	1	White	No change	No change
9	Magnesium stearate	1	White	No change	No change
10	SSG	1	White	No change	No change
11	Sodium Saccharin	1	White	No change	No change
12	API+Cross carmellose sodium	5:1	Off white	No change	No change
13	API+ Starch 1500	5:1	Off white	No change	No change
14	API+ MCC PH 101	1:5	Off white	No change	No change
15	API+ SLS	5:1	Off white	No change	No change
16	API+ Povidone	5:1	Off white	No change	No change
17	API+ Aerosil	5:1	Off white	No change	No change
18	API+ Magnesium stearate	5:1	Off white	No change	No change
19	API+SSG	5:1	Off white	No change	No change
20	API+Sodium saccharin	5:1	Off white	No change	No change

Table No.4:Pre-compression parameters for formulations DF1 to DF4

S.No	Formulation	Angle of repose (^{0})	Compressibility index (%)	Hausner's Ratio	LOD (%)
1	DF1	30.80	25.40	1.36	1.37
2	DF2	30.32	25.26	1.33	0.93
3	DF3	25.70	24.74	1.32	0.81
4	DF4	28.28	23.20	1.30	0.89

Table No.5: Compression parameters for formulations DF1 to DF4

S.No	Formulation	Average weight (mg)	Thickness (mm)	Hardness (kg/cm^2)	Friability (%)
1	DF1	952.6	4.17	4.02	1.02
2	DF2	904.1	4.22	5.13	0.89
3	DF3	897.2	4.18	5.48	0.62
4	DF4	901.0	4.17	5.42	0.39

Table No.6: Disintegration time, Dispersion time, Water content and Assay values for formulations DF1 to DF4

S.No	Formulation	Disintegration time (sec)	Dispersion time (sec)	Water content (w/w)	Assay (%)
1	DF1	60	118	3.5	99.8
2	DF2	50	109	3.1	98.3
3	DF3	38	80	4.2	101.0
4	DF4	30	60	3.6	99.5

Table No.7: Standard calibration curve of Deferasirox

S.No	Concentration (µg/ml)	Absorbance
1	2	0.136
2	4	0.250
3	6	0.354
4	8	0.442
5	10	0.591
6	12	0.684
7	14	0.801
8	16	0.902
9	18	1.020
10	20	1.131

Table No.8: Dissolution profiles of different formulations (DF1 to DF4)

S.No	Sampling time (mins.)	Cumulative percentage drug release				
		DF1	DF2	DF3	DF4	Market Sample (ASUNRA)
1	0	0	0	0	0	0
2	10	25.36	55.21	70.32	82.36	80.21
3	20	30.15	70.23	80.36	92.36	93.32
4	30	38.36	84.21	90.35	99.36	98.68
5	45	50.68	92.68	96.35	100.08	101.23

Table No.9: Physical and chemical parameters of Deferasirox dispersible tablets (DF4) after 1st and 2nd month at 40±2°C /75±5 %RH

S.No	Parameter	Day '0'	30days	60days
1	Description	Round shaped uncoated tablets	No change	No change
2	Avg.wt (mg)	850.12	850.10	850.12
3	Hardness (kp)	5.39	5.33	5.37
4	Thickness (mm)	4.11	4.18	4.13
5	Friability (%)	0.20	0.19	0.18
6	Water content (w/w)	1.7	1.6	1.5
7	Assay (%)	99.98	99.67	99.47

Table No.10: Dissolution profiles of Deferasirox dispersible tablets (DF4) after 1st and 2nd month at 40±2°C /75±5 % RH

S.No	Time interval (min)	Cumulative percentage drug release		
		Day '0'	30days	60days
1	10	82.36	82.01	81.88
2	20	92.36	92.45	91.44
3	30	99.36	98.89	98.08
4	45	100.08	99.18	98.99

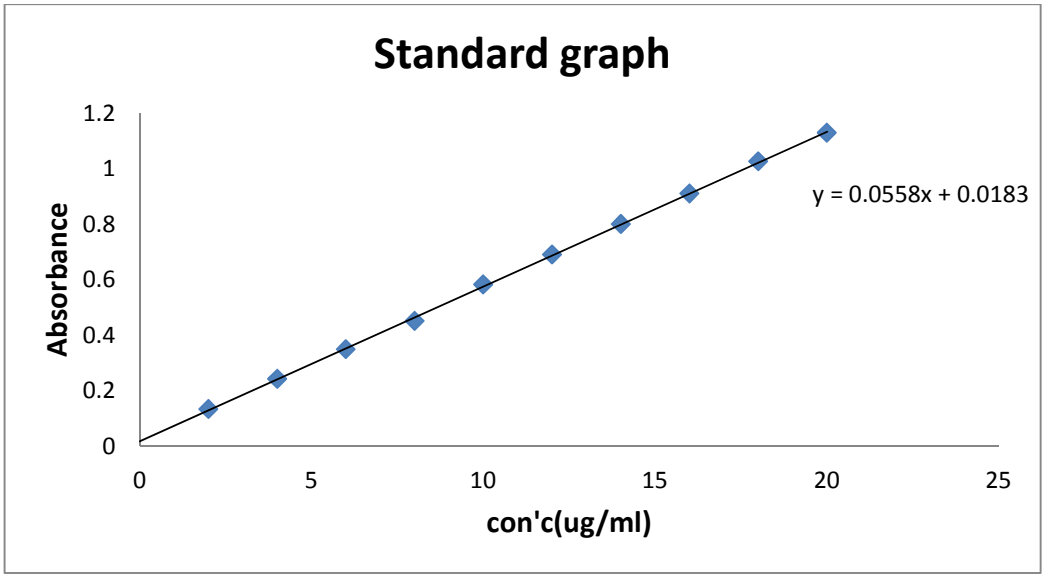


Figure No.1: Standard graph of deferasirox in 6.8 phosphate buffer

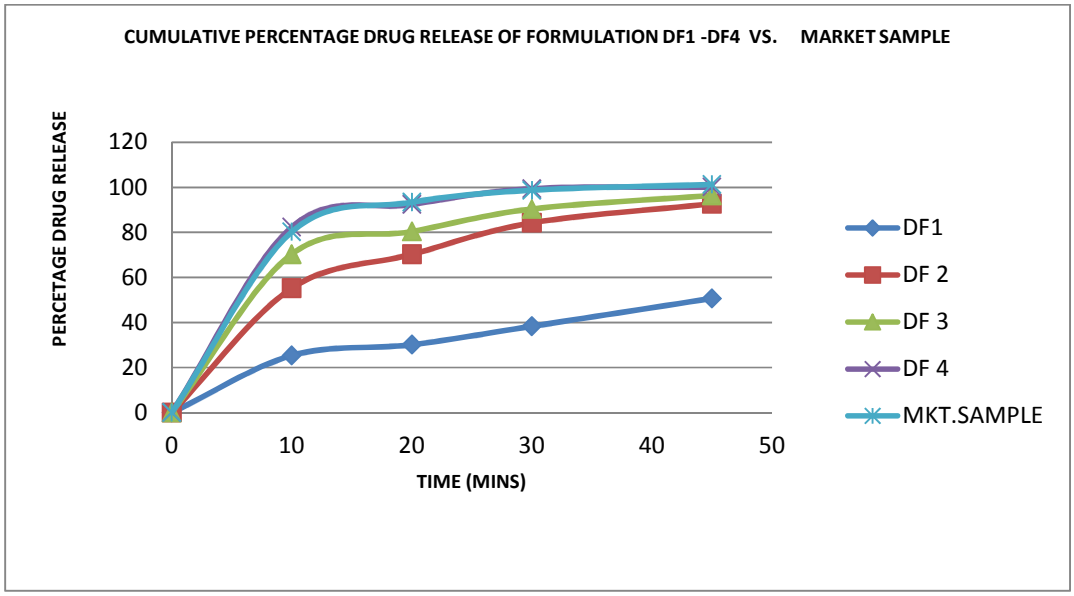
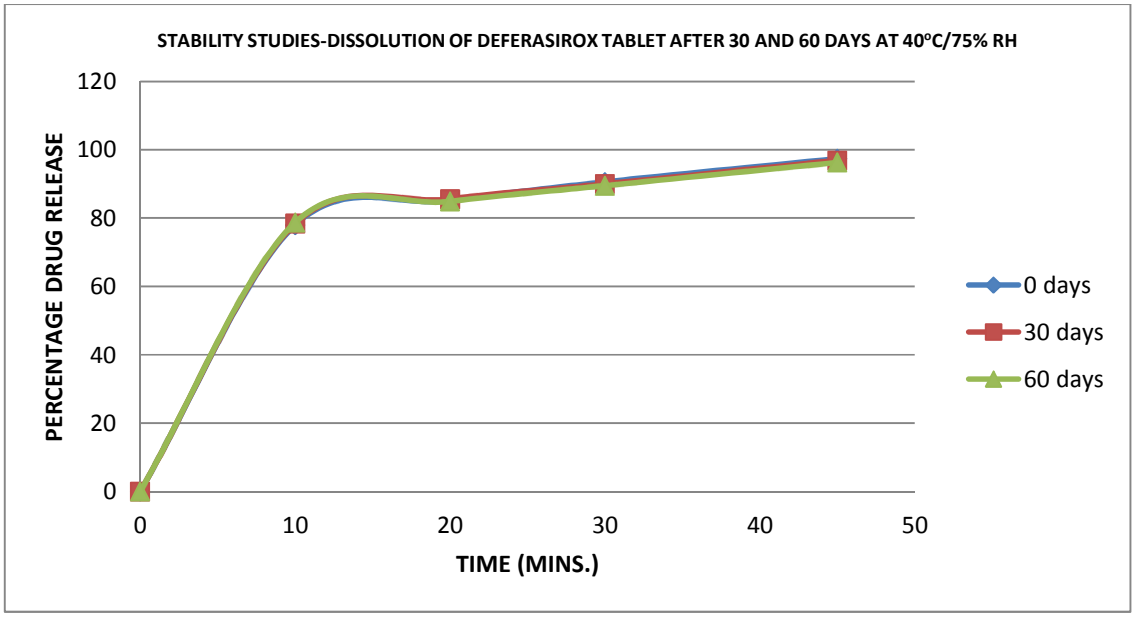


Figure No.2: Dissolution of deferasirox dispersible tablet Vs. Market sample



FigureNo.3: Graphical representation of Dissolution profiles of stability studies conducted at 40±5°C /75±5 %RH for formulation DF4

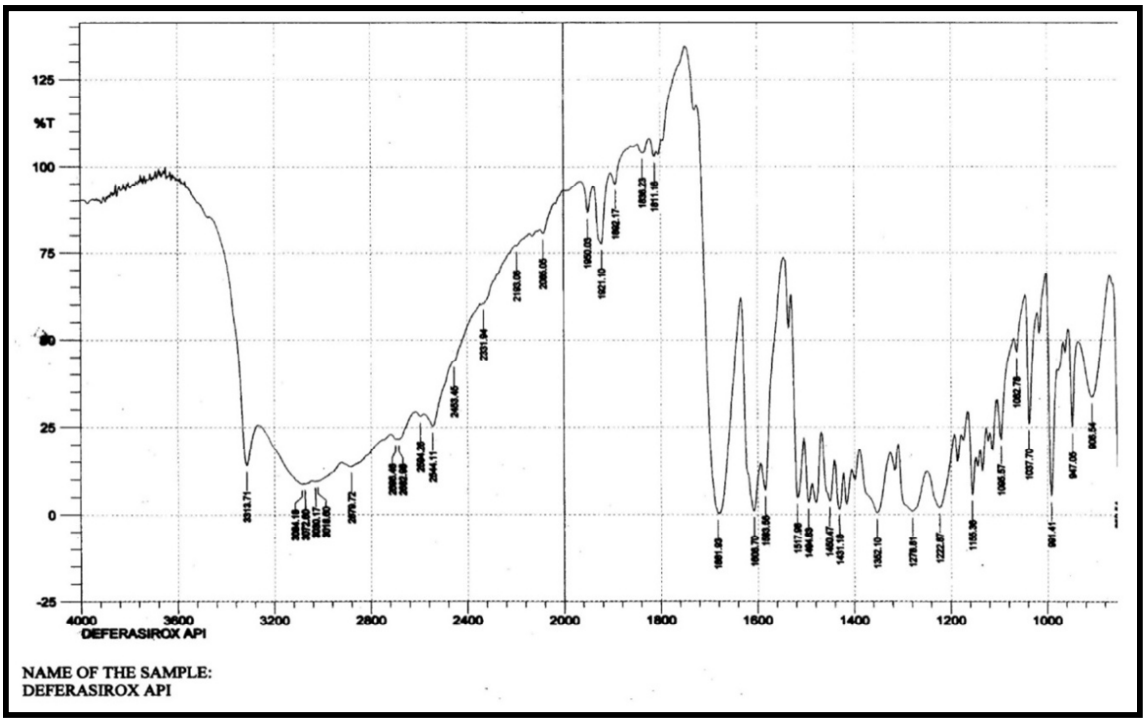


Figure No.4: IR spectrum of pure drug

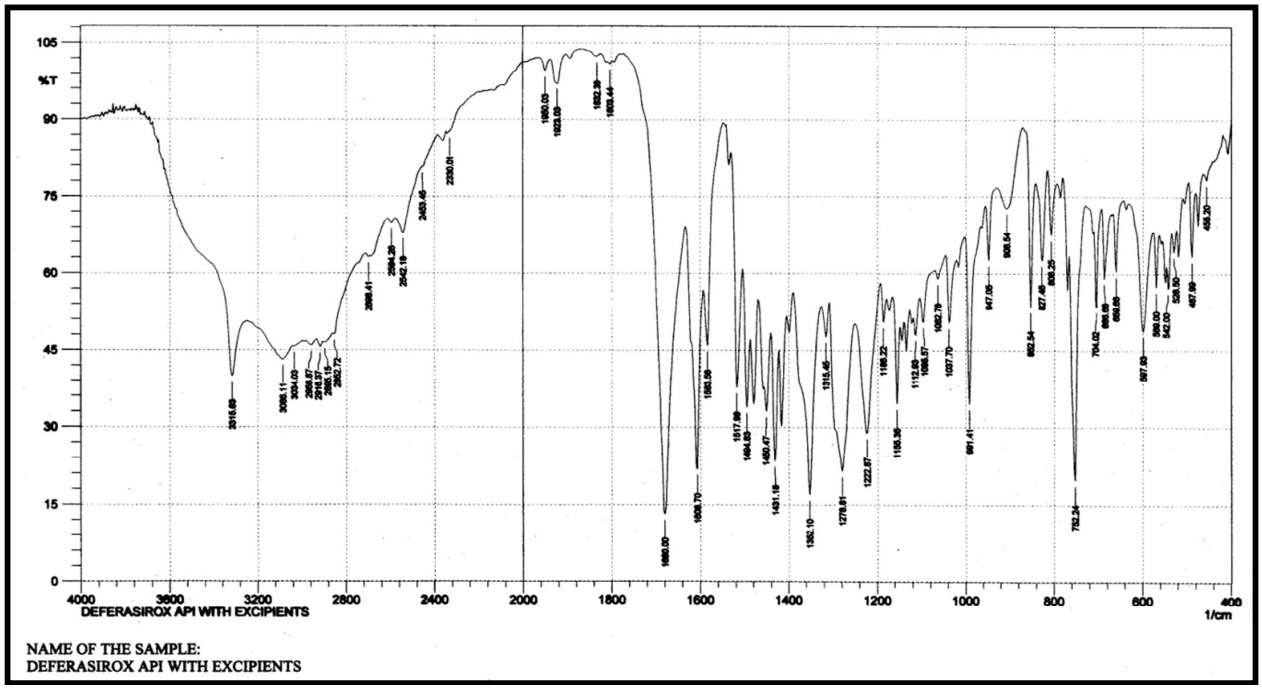


Figure No.5: IR spectrum of physical mixture

CONCLUSION

The present investigation was undertaken to formulate Deferasirox dispersible tablet for the treatment of chronic iron overload. For the development and formulation of dispersible tablets, wet granulation techniques were carried out. Various approved excipients like cross carmelose sodium and sodium starch glycolate as superdisintegrants, Microcrystalline cellulose pH101as hydrophilic diluents and sodium lauryl sulphate as surfactant to increase solubility, polyvinyl pyrrolidone as binding agent magnesium stearate and Aerosil as lubricant and glidant were selected. All the experimental formulation batches have been subjected to various evaluation parameters viz, average weight, thickness, hardness, friability, disintegration, uniformity of dispersion, dissolution studies, water content and assay.

All the formulations were subjected to physicochemical analysis and out of them Formulation DF4 was found to be satisfactory when compared to other formulations. The disintegration time (30 sec), dispersion time (60 sec) and percentage of drug release (100.08 %) were found to be satisfactory and it matches with the market sample. Finally loaded for stability as per the ICH guidelines.

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CONFLICT OF INTEREST

None declared.

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