

Research Article

Formulation and Evaluation of Oro Dispersible Tablets of Rizatriptan Benzoate by Direct Compression Technique

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ABSTRACT

The purpose of the present research was to optimize the formulation of Orodispersible tablets of Rizatriptan Benzoate. Orodispersible tablets of Rizatriptan Benzoate were prepared by direct compression method using different types of Superdisintegrant (Sodium Starch Glycolate, Crospovidone and Croscarmellose Sodium) at different concentrations. The formulations were evaluated for effect of Superdisintegrant on Tablet weight variation, content uniformity, hardness, friability, wetting time, dispersion time, drug content and *in vitro* release studies. All formulations showed satisfactory mechanical strength and tablet containing Crospovidone (12%) showed excellent *in vitro* dispersion time and drug release as compared to other formulation. The results revealed that the tablets containing 12% Crospovidone (F_8) showed short dispersion time (20 sec) with maximum drug release (100%) in 10 min. FTIR & DSC results showed no evidence of interaction between the drug and polymers. This study helps in revealing the effect of formulation processing variables on tablet properties. It can be concluded that the Orodispersible tablets of Rizatriptan Benzoate tablets could be prepared by direct compression using Crospovidone (12%) superdisintegrant.

Keywords: Rizatriptan Benzoate, Sodium Starch Glycolate, Crospovidone, Croscarmellose Sodium.

INTRODUCTION

Recent advances in novel drug-delivery system aims to enhance the safety and efficacy of the drug molecule by formulating a dosage form being convenient for the administration. Difficulty in swallowing (i.e., dysphagia) is experienced by patients such as paediatrics, geriatric, bedridden, disabled, mentally ill, including motion sickness and sudden episodes of allergic attacks, hence resulting in higher incidence of noncompliance and ineffective therapy¹. In order to solve this problem and improve patient acceptance and compliance, the development of solid dosage forms that disintegrate rapidly or dissolve even when taken orally without water is being undertaken. Oral fast-disintegrating dosage forms (tablet or a capsule) are a relatively novel dosage technology that involves the rapid disintegration or dissolution of the dosage form² into a solution or suspension in the mouth without the need for water³. The dosage form begins to disintegrate immediately after coming into contact with saliva, with complete disintegration normally occurring within 30–50 s after administration⁴. The solution containing the active ingredients is swallowed, and the active ingredients are

then absorbed through the gastrointestinal epithelium to reach the target and produce the desired effect. Tablet is the most widely used dosage form because of its convenience in terms of self-administration, compactness, and ease in manufacturing⁵. Orally disintegrating tablets are also called as Orodispersible tablets, quick-disintegrating tablets, mouth-dissolving tablets, fast-disintegrating tablets, fast dissolving tablets, rapid-dissolving tablets, porous tablets, and rapid melts. However, of all the above terms, the United States Pharmacopoeia (USP) approved these dosage forms as Orodispersible tablets (ODTs). Recently, the European Pharmacopoeia has used the term Orodispersible tablets for tablets that disperse readily and within 3 min in the mouth before swallowing. The United States Food and Drug Administration define ODT as “a solid dosage form containing medicinal substance or active ingredient which disintegrates rapidly usually within a matter of seconds when placed upon the tongue.” The disintegration time for ODTs generally ranges from several seconds to about a minute⁶. Other advantages of ODTs that have been investigated are their potential to increase the bioavailability of poorly water soluble drug

through enhancing the dissolution profile of the drug⁷. Moreover, pharmaceutical companies also have commercial reasons for formulating ODTs. As a drug reaches the end of its patent, the development and formulation of the drug into new dosage forms allow pharmaceutical companies to extend the patent life and "market exclusivity"⁸. The ODTs could be prepared using various techniques such as tablet moulding, spray drying, sublimation, lyophilisation, solid dispersion, or addition of disintegrants⁹⁻¹³. The basic approach to the development of ODTs is the use of superdisintegrants such as Croscarmellose sodium and sodium starch glycolate. Another approach used in developing ODTs is maximizing the pore structure of the tablet matrix. Freeze drying and vacuum drying techniques have been tried by researchers to maximize the pore structure of the tablet matrix¹⁴⁻¹⁶. However, freeze drying is cumbersome and yields a fragile and hygroscopic product. Vacuum drying along with the sublimation of volatilizable ingredient has been employed to increase tablet porosity. While in designing dispersible tablets, it is possible to achieve effective taste masking as well as a pleasant feel in the mouth. The main criterion for ODTs is the ability to disintegrate or dissolve rapidly in saliva of the oral cavity in 15 to 60 s and have a pleasant mouth feel¹⁷. To improve the quality of life and treatment compliance, great efforts have been made to develop fast-disintegrating tablets (FDTs) in the oral cavity, using jelly, water-absorbing, and swelling-gelated materials or water-soluble polymers¹⁸.

MATERIALS

Rizatriptan Benzoate was chosen as an active ingredient and was kindly gifted by Natco Pharma., Ltd, Spray Dried Lactose (KMV Enterprises, Hyderabad), Pearlitol SD 200 (Intchem International, Mumbai), Croscarmellose, Sodium Starch Glycolate, Crospovidone, Avicel (Signet Chemical Corporation, Mumbai), Aspartame (Kawarlal & Sons, Chennai), Peppermint Flavor (Girvardar Pvt., Bangalore) were used. All other reagents were of analytical grade.

METHOD OF FORMULATION

Rizatriptan Benzoate Oro-dispersible tablets were formulated by using direct compression method. The drug and all other excipients were sifted through #30 sieves and mixed thoroughly. The above blend was pre lubricated with aerosil and lubricated with magnesium stearate. The above lubricated

blend was compressed using 8.5mm Flat punch at a tablet weight of 200mg.

Characterization of Orodispersible tablets

The prepared tablets were evaluated for different Pre Compressional and Post Compressional properties like Angle of Repose, Bulk Density, Tapped Density, % Compressibility, Hausner's Ratio, weight variation, friability, hardness, thickness, disintegration time, wetting time, assay and In vitro dissolution studies.

Angle of Repose^{19 - 22}

Angle of repose was determined using funnel method. The blend was poured through a funnel that can be raised vertically until a maximum cone height (h) was obtained. Radius of the heap (r) was measured and angle of repose (θ) was calculated using the following formula.

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

Bulk Density^{19 - 22}

Apparent bulk density (pb) was determined by pouring the blend into a graduated cylinder. The bulk volume (Vb) and weight of the powder (M) was determined. The bulk density (pb) was calculated using following formula:

$$pb = Vb / M$$

Tapped Density^{19 - 22}

The measuring cylinder containing a known mass of blend (M) was tapped for a fixed time (100 tapings). The minimum volume (Vt) occupied in the cylinder and weight of the blend was measured. The tapped density (pt) was calculated using following formula,

$$pt = Vt/M$$

Compressibility Index^{19 - 22}

The simplest method of measurement of free flow of powder is compressibility, an indication of the ease with which material can be induced to flow and is given by compressibility index (I) which is calculated as follows,

$$I = \{ (pt - pb) / pt \} * 100$$

The value below 15% indicates a powder which usually gives rise to excellent flow characteristics, whereas above 25% indicate poor flow ability.

Hausner's Ratio (H)¹⁹⁻²²

This is an indirect index of ease of powder flow. Lower Hausner's ratio (<1.25) indicates better flow properties than higher ones (>1.25). It is calculated by the following formula,

$$H = \rho_t / \rho_b$$

WEIGHT VARIATION²³⁻²⁶

20 tablets were selected at a random and then the average weight was determined. All the 20 tablets were weighed individually and compared with the average weight the tablets meet USP specifications if no more than 2 tablets are outside the percentage limit and if no tablet differs by more than 2 times the percentage limit.

FRABILITY²³⁻²⁶

The friability test was performed for all the formulated Oro-dispersible Rizatriptan Benzoate tablets. Twenty tablets were taken and their weight was determined. Then they were placed in the Roche friabilator and allowed to make 100 revolutions. The tablets were then de-dusted and reweighed. The percentage weight loss was calculated. Percentage Friability was calculated as follows:

$$\text{Percentage Friability} = (W_1 - W_2) \times 100 / W_1$$

Where, W_1 = Initial weight of the 20 tablets.

W_2 = Final weight of the 20 tablets after testing.

Friability values below 1% are generally acceptable.

HARDNESS²³⁻²⁶

Monsanto hardness tester was used for measuring the hardness of the formulated Oro-dispersible Rizatriptan Benzoate tablets. From each batch five tablets were taken and subjected to test. The mean of the five tablets were calculated. The breaking strength (in kg) of each tablet was tested using a Stokes-Monsanto hardness tester (DT Stokes, Bristol, PA). The formulated as well as the commercial tablets were circular and flat. After the dial on the tester was set to zero, a tablet was placed between the two jaws. The breaking point was determined by gradually increasing the force on the tester. Breaking strength is the force applied (in kg) to break the tablet radially into two halves.

WETTING TIME²⁷⁻²⁹

The wetting time of the tablets was measured using a simple procedure. Five circular tissue papers of 10cm diameter were placed in a Petridish containing 10.0 ml of water containing Eosin blue. A tablet was carefully

placed on the surface of tissue paper. The time required for develop blue color on the upper surface of the tablet was noted as the wetting time.

THICKNESS OF TABLETS²³⁻²⁶

Thickness is measured by using instrument called digital "vernier calipers". Randomly 10 tablets were taken and thickness was measured for each tablet by placing between two anvils and rotating sliding knob until the tablet was tightly fitted and the reading was noted on the digital scale.

IN- VITRO DISPERSION TIME²⁸

In vitro dispersion time was measured by dropping a tablet in 20ml of Simulated Salivary Fluid (Phosphate Buffer of pH – 6.8) in a beaker. The time for the tablet to completely disintegrate into fine particles was noted. Three tablets from each batch were randomly selected and *in vitro* dispersion time was performed.

DRUG CONTENT²⁸

10 tablets were taken, powdered well and a quantity of powder equivalent to 200mg of Rizatriptan Benzoate was accurately weighed and dissolved in 100ml of Simulated Salivary Fluid (Phosphate Buffer of pH – 6.8) and filtered. The absorbance of the solution was measured at 280nm against blank Simulated Salivary Fluid (Phosphate Buffer of pH – 6.8). The concentration of the sample was calculated using standard graph.

COLOR, TASTE AND MOUTH FEEL EVALUATION²⁸

A panel of 6 volunteers was employed to assess the color, taste and mouth feeling of prepared Rizatriptan Benzoate Orodispersible tablets. The human test was performed according to the guidelines of WMA Helsinki declaration²⁸. The comments of the panel members were recorded.

FTIR²⁸

The FT-IR spectrums of pure drug and formulation were determined. A FT-IR (Thermo Nicolet 670 spectrometer) was used for the analysis in the frequency range between 4000 and 400 cm^{-1} , and 4 cm^{-1} resolution. The results were the means of 6 determinations. A quantity equivalent to 2 mg of pure drug was used for the study.

DSC²⁸

Thermal properties of pure drug and the formulation were evaluated by Differential

scanning calorimetry (DSC) using a Diamond DSC (Mettler Star SW 8.10). The analysis was performed at a rate $50^{\circ}\text{C min}^{-1}$ from 500°C to 2000°C temperature range under nitrogen flow of 25 ml min^{-1} .

IN-VITRO DRUG RELEASE³⁰

In vitro dissolution studies for all the formulated tablets was carried out using USP paddle method at 50 rpm in 500ml of Simulated Salivary Fluid (Phosphate Buffer of pH – 6.8) as dissolution media, maintained at $37\pm 0.5^{\circ}\text{C}$. 5 ml aliquot was withdrawn at the specified time intervals, filtered through wattmann filter paper and assayed spectrophotometrically at 280nm. An equal volume of fresh medium, which was pre-warmed at 37°C , was replaced into the dissolution media after each sampling to maintain the constant volume throughout the test. Dissolution study of conventional marketed tablet of Rizatriptan Benzoate is also carried out using same method.

STABILITY STUDY³¹

The oral dispersible tablets of batch F_8 were wrapped in an aluminum foil and placed in a stability chamber controlled at $40 \pm 2^{\circ}\text{C}/75 \pm 5^{\circ}\text{C}$ relative humidity for a period of 3 months. At the end of 3rd month the formulation F_8 was evaluated for its Physical Characteristics, Drug Content and Dissolution Properties.

STATISTICAL ANALYSIS

The results were analyzed by two tailed Student's t-test using the Graph Pad InStat Software (GPIS; Version: 1.13)³².

RESULTS AND DISCUSSION

Micromeritic Properties

Table - 2 shows the results of loose bulk density (LBD) and tapped bulk density (TBD). These parameters were used to assess the packability of the crystals. The highest LBD (0.58 ± 0.01 to $0.68 \pm 0.01\text{ g mL}^{-1}$, $n = 3$) and TBD value (0.65 ± 0.01 to $0.79 \pm 0.01\text{ g mL}^{-1}$, $n = 3$) of pure drug indicates a high

intergranular space between particles. These results indicate good packability of pure drug Rizatriptan Benzoate. The results of Carr's index, Hausner's ratio and angle of repose 22.0 ± 0.01 to 27.0 ± 0.02 of pure drug are presented in Table - 2. These parameters were used to assess the flow and compressibility properties of pure drug. Carr's index and Hausner's ratio of pure drug were 9.5 ± 0.02 to $16.58 \pm 0.03\%$ and 1.10 ± 0.01 to 1.36 ± 0.02 ($n = 3$), respectively, indicates extremely good flow properties.

Hardness

Table - 4 shows the hardness of all formulations, and the hardness was constantly maintained between $3 - 4\text{ kg/cm}^2$ for all formulations during compression.

Friability

Table - 4 shows the friability values all the formulations. The results indicated that the % friability was between 0.21 ± 0.01 to $0.43 \pm 0.03\%$. The low values of friability indicate that tablets were mechanically hard enough.

Thickness

As shown in Table - 2, thickness of tablets ranged from $2.89 \pm 0.01\text{mm}$ to $3.03 \pm 0.01\text{mm}$.

Disintegration Time

Table - 4 show the disintegration time of the formulations. As the percentage of superdisintegrant increased (8% to 12%) the disintegration time decreased significantly ($p < 0.05$). It is because Crospovidone (12%) containing tablets rapidly exhibits high capillary activity and pronounced hydration with a little tendency to gel formation and disintegration the tablets rapidly.

Wetting Time

Table - 4 & Figure - 1 shows the wetting time studies of all formulations. Wetting time is lesser ($14\text{sec} \pm 0.01$) in case of Crospovidone (12%) because of higher capillary action.



Fig. 1: Wetting time of Crospovidone (12%) at 5 sec, 10 sec & 14 Sec

Drug Content of Tablets

Table -4 shows the drug content of tablets ranged between 99.8 ± 0.01 to $100.6 \pm 0.01\%$.

In Vitro Dispersion Time

Table – 4 & Fig – 2 shows *In vitro* dispersion time for all formulations which was measured by dropping a tablets in 20ml of Simulated

Salivary Fluid (Phosphate Buffer of pH – 6.8) in a Petri dish. The time for the tablet to completely disintegrate into fine particles was noted. Three tablets from each batch were randomly selected and *in vitro* dispersion time was found to be 20 ± 0.01 for formulation F₈ containing Crospovidone at 12% concentration.

**Taste and Mouth Feel Evaluation**

Table – 5 shows formulations using flavoring agent such as Peppermint Flavor with Aspartame. The tablets were prepared by compressing under 8.5mm flat punch and each tablet weight is adjusted to 200mg which

were evaluated for taste and mouths feel in 6 volunteers. The formulations with Aspartame and Peppermint flavor scored various acceptability results. Among them formulation (F₈) showed good acceptability.

Table 5: Taste and Mouth Feel Evaluation

Formulation Code	Average Points by Volunteer	Acceptability
F ₁	90	B
F ₂	90	B
F ₃	89	C
F ₄	90	B
F ₅	89	C
F ₆	89	C
F ₇	90	B
F ₈	99	A
F ₉	92	B

A: Good, B: Average, C: Bitter

The weight variation of all formulations was in the range. Drug content of Rizatriptan Benzoate from all the formulations was found to be in the range of $99.8 \pm 0.01\%$ to $100.6 \pm 0.01\%$. The hardness was constantly maintained between 3 - 4 g /cm² during compression. Friability for all the formulation shown less than $0.43 \pm 0.03 \%$ which is in the acceptable limits which indicates formulations have good mechanical strength. Thickness of the tablets found to be $2.89 \pm 0.01\text{mm}$ to $3.03 \pm 0.01\text{mm}$. Disintegration time of formulations found to be between 14 ± 0.01 to 20 ± 0.01 seconds. The results were summarized in table – 4. Figure – 5 and Table - 3 shows *in vitro* dissolution studies and drug release profiles of all formulations. Compared to Innovator product, formulation (F₈) containing Rizatriptan Benzoate tablet with Crospovidone

(12%) showed 100% release profile within 10 minutes. The results were summarized in table -3. Finally the prepared tablets were evaluated for taste and mouths feel in 6 volunteers. The formulations with aspartame and Peppermint flavor scored good and excellent results. So this formulation (F₈) was the optimized formulation.

Differential scanning calorimetric study (DSC)

Figure – 3 shows DSC results with sharp endothermic peak for the pure Rizatriptan Benzoate at 172.21. Similar sharp endothermic peaks were observed in the formulations at almost similar temperatures. This clearly indicates that there is no drug excipient Interaction.

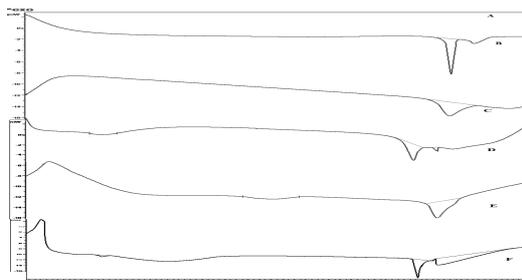
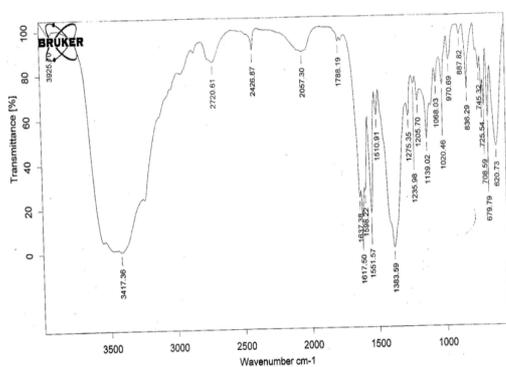


Fig. 3: DSC Thermograms of Pure Drug with different concentrations of Superdisintegrants

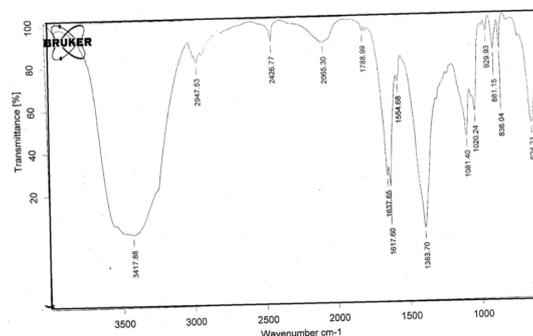
Fourier Transform Infrared Spectroscopy (FTIR)

The FTIR shows all similar spectrum peak points of functional groups as pure drug

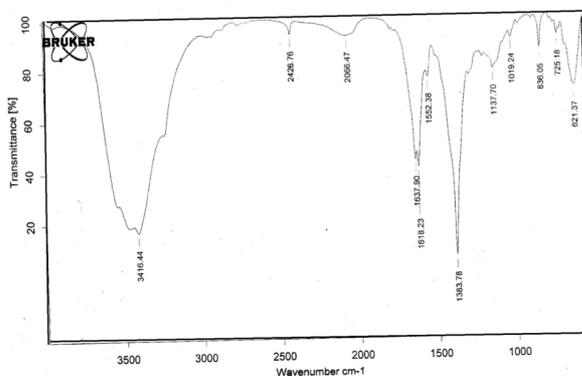
Rizatriptan Benzoate in all the formulations. This clearly indicates that there is no drug excipient interaction.



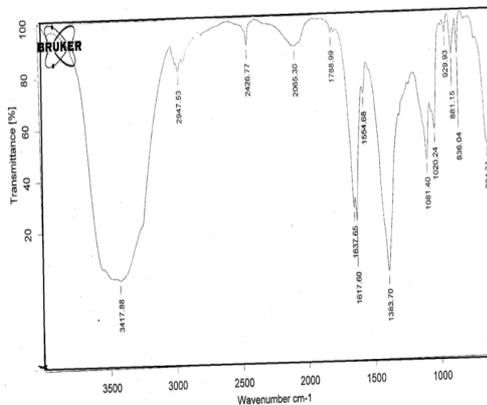
a) Pure Drug



b) Pure Drug with Crospovidone



c) Pure Drug with Croscarmellose Sodium



d) Pure Drug with Sodium Starch Glycolate

Fig. 4: FTIR Studies of Rizatriptan Benzoate with various Superdisintegrants

Invitro – Dissolution Studies

Table – 4 & Figures - 5 shows dissolution studies of Rizatriptan Benzoate in Simulated Salivary Fluid of Phosphate Buffer pH – 6.8.

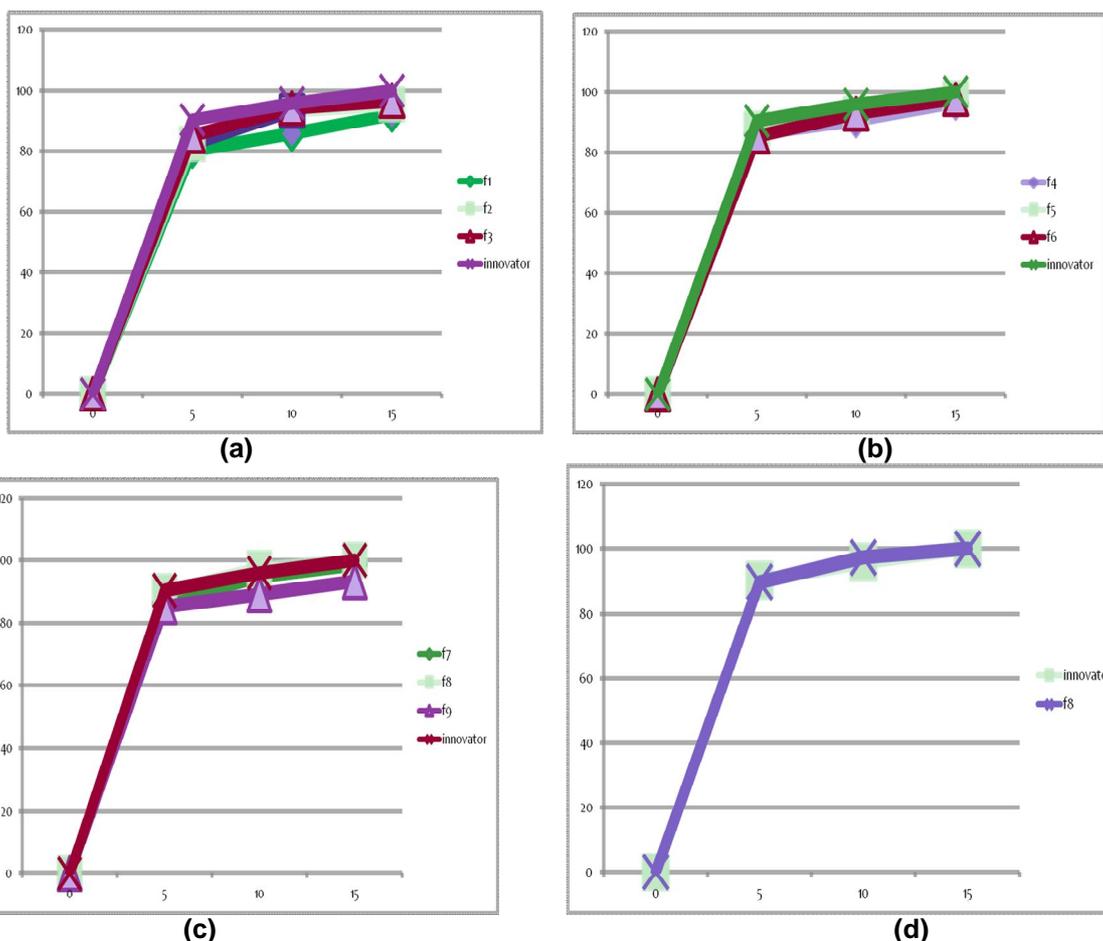


Fig. 5: Comparison of Cumulative %Drug Release vs time profiles of Rizatriptan Benzoate ODT with Innovator Product

Stability Studies

Figure 6 & Table – 6 shows the results after stability studies. Results indicate that the drug

Rizatriptan Benzoate was stable in the Oro dispersible tablets with various concentrations of superdisintegrants.

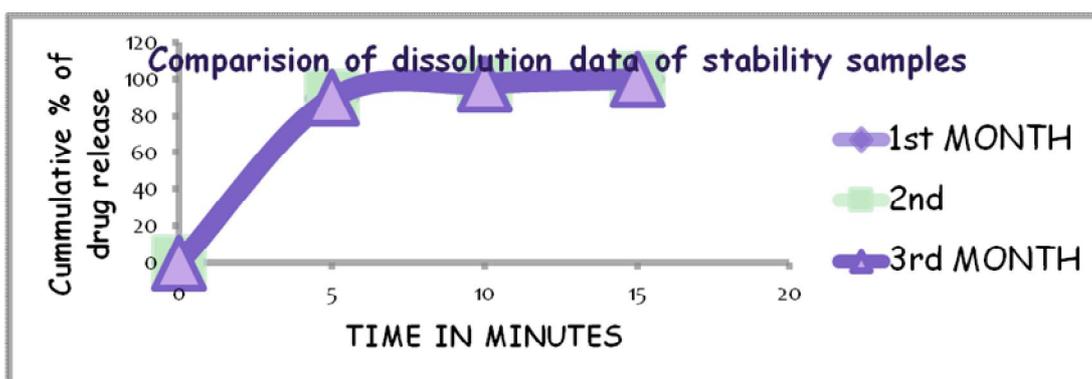


Fig. 6: Cumulative % Drug Release (vs) Innovator after Stability Period

Table 6: Thickness, Hardness, % Friability, Disintegration Time & Drug Content after Stability Studies of Rizatriptan Benzoate Tablets (F₈)

PARAMETERS TESTED	STORAGE CONDITIONS			
	INITIAL	40°C±2°C / 75% ±5% RH		
		1 st month	2 nd month	3 rd month
Description	White round tablets embossed with 10 on one side and plain on the other side.	No change	No change	No change
Average weight (mg)	200 ± 0.01	201 ± 0.01	201 ± 0.01	202 ± 0.02
Thickness (mm)	2.95 ± 0.01	2.95 ± 0.03	2.95 ± 0.01	2.96 ± 0.02
Hardness (kg/Cm ²)	1.78 ± 0.01	1.78 ± 0.01	1.79 ± 0.01	1.78 ± 0.01
% Friability	0.34 ± 0.01	0.34 ± 0.01	0.35 ± 0.01	0.35 ± 0.01
Disintegration Time (sec)	10 ± 0.01	11 ± 0.01	10 ± 0.01	10 ± 0.01
Water content (%)	1.253 ± 0.01	1.252 ± 0.01	1.249 ± 0.01	1.250 ± 0.01
Drug Content	100.3 ± 0.01	100.2 ± 0.01	100.3 ± 0.01	100.3 ± 0.01

*Each value represents mean ± S.D (n=3).

CONCLUSION

Rizatriptan Benzoate Orally dispersible tablets were developed with an aim to improve the patient's compliance. The formulations were developed with an objective to use by the pediatric and geriatric patients. The Rizatriptan Benzoate ODT formulation were developed with different superdisintegrants such as Crospovidone, Sodium starch glycolate, Croscarmellose sodium at 8 - 12% used in each formulation by direct compression method. The present investigations were helped in understanding the effect of formulation process variables especially the concentration of different super disintegrants on the dispersion time and drug release profile. The formulation prepared with lower concentration of Crospovidone, Sodium starch glycolate, Croscarmellose sodium yields rapid disintegration and dissolutions. However DT was a little less in the lower concentration of Superdisintegrant. To improve the disintegration time, the formulations were prepared with increased concentrations of superdisintegrants such as crospovidone, Sodium starch glycolate, Croscarmellose sodium. Increased concentrations of superdisintegrants improved the disintegration time without any changes in the physicochemical properties. The mouth feel of the formulations prepared with Sodium starch glycolate, Croscarmellose sodium resulted smooth and fine particles where as the formulations prepared with crospovidone yields particulate matter on the tongue. The present study concluded that 12% Crospovidone is excellent for the preparation of Rizatriptan Benzoate Orodispersible tablets. Taste masking and rapid disintegration of tablets formulated in this investigation may

possibly help in administration of Rizatriptan Benzoate in a more palatable form without water. Thus, the "patient-friendly dosage form" of bitter drug Rizatriptan Benzoate, especially for pediatric, geriatric, bedridden, and non-cooperative patients. By the availability of various technologies and manifold advantages Oro dispersible tablets will surely enhance the patient compliance, low dosing, rapid onset of action, increased bioavailability, low side effects, and good stability. The formulations may be commercialized after establishing chemical and biological parameters.

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Table 2: Pre – Compressional Parameters Angle of Repose, Bulk Density, % Compressibility of different Tablet formulations

Formulation	Angle of Repose (θ)	Loose Bulk Density (g/ml)	Tapped Density (g/ml)	% Compressibility	Hausner's Ratio
F ₁	25.0 ± 0.01	0.58 ± 0.01	0.79 ± 0.01	16.58 ± 0.03	1.36 ± 0.02
F ₂	24.0 ± 0.02	0.68 ± 0.01	0.76 ± 0.01	13.1 ± 0.02	1.11 ± 0.02
F ₃	24.0 ± 0.03	0.67 ± 0.01	0.78 ± 0.02	12.8 ± 0.02	1.16 ± 0.02
F ₄	24.0 ± 0.02	0.59 ± 0.01	0.65 ± 0.01	9.9 ± 0.03	1.10 ± 0.03
F ₅	25.0 ± 0.01	0.62 ± 0.01	0.70 ± 0.03	11.4 ± 0.01	1.12 ± 0.01
F ₆	25.0 ± 0.01	0.59 ± 0.01	0.66 ± 0.01	10.6 ± 0.01	1.11 ± 0.02
F ₇	27.0 ± 0.02	0.63 ± 0.01	0.71 ± 0.02	11.2 ± 0.02	1.12 ± 0.01
F ₈	22.0 ± 0.01	0.66 ± 0.01	0.73 ± 0.02	9.5 ± 0.02	1.10 ± 0.01
F ₉	25.0 ± 0.03	0.66 ± 0.01	0.74 ± 0.01	10.8 ± 0.01	1.12 ± 0.01

*Each value represents mean ± S.D (n=3)

Table 3: In-vitro Dissolution Comparison of Rizatriptan Benzoate along with Innovator product

S. No	Time (min)	Innovator	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈	F ₉
1	0	0	0	0	0	0	0	0	0	0	0
2	5	90.3	80.3	82.5	85.0	86.1	87.6	85.3	86.6	89.8	85.3
3	10	99.9	85.9	93.3	94.2	90.6	92.9	92.9	94.7	100.0	89.1
4	15	100.1	92.1	95.4	96.7	96.3	98.0	97.6	98.5	100.1	93.2

Table 1: Formulae used in the preparation of tablets containing different concentrations of Superdisintegrants

INGREDIENTS	F1	F2	F3	F4	F5	F6	F7	F8	F9
Rizatriptan Benzoate	14.53mg	14.53mg	14.53mg	14.53	14.53mg	14.53mg	14.53 mg	14.53 mg	14.53mg
Spray dried lactose	50.39mg	-	-	-	-	-	-	-	-
Avicel pH 102	-	83.98mg	117.57mg	50.39mg	50.39mg	50.39mg	50.99 mg	49.79 mg	50.76mg
Pearlitol	117.57mg	83.98mg	50.39mg	117.57mg	117.57mg	117.57mg	118.97 mg	116.17 mg	118.45mg
Crospovidone	10mg	10mg	10mg	10mg	-	-	8mg	12mg	10mg
Croscarmellose	-	-	-	-	10mg	-	-	-	-
Sodium starch Glycolate	-	-	-	-	-	10mg	-	-	-
Aspartame	4mg	4mg	4mg	4mg	4mg	4mg	4mg	4mg	4mg
Peppermint Flavour	1mg	1mg	1mg	1mg	1mg	1mg	1mg	1mg	1mg
Magnesium Stearate	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	1.25mg
Total weight(mg)	200	200	200	200	200	200	200	200	200

*Each value represents mean ± S.D (n=3)

Table 4: Post – Compressional Parameters, Disintegration times, Wetting time, Drug Content & Dissolution time of different Tablet formulations

Formulation	Hardness (Kg/cm ²)	Thickness (mm)	Friability (%)	Avg. Weight (mg)	Content uniformity (%)	Wetting time (sec)	In vitro Dispersion time	Water Absorption Ratio	Disintegration Time (Sec)
F1	3.12 ± 0.02	2.97 ± 0.02	0.29 ± 0.02	199.23 ± 0.01	99.9 ± 0.01	17 ± 0.01	67 ± 0.01	21 ± 0.1	11 ± 0.02
F2	3.08 ± 0.01	3.01 ± 0.03	0.21 ± 0.01	200.01 ± 0.03	99.9 ± 0.02	20 ± 0.01	90 ± 0.01	20 ± 0.2	21 ± 0.03
F3	3.77 ± 0.01	2.89 ± 0.01	0.39 ± 0.02	200.03 ± 0.01	99.8 ± 0.01	15 ± 0.02	79 ± 0.01	15 ± 0.2	13 ± 0.01
F4	3.76 ± 0.02	2.94 ± 0.02	0.35 ± 0.01	199.89 ± 0.02	100.0 ± 0.04	16 ± 0.02	51 ± 0.01	16 ± 0.1	11 ± 0.02
F5	3.78 ± 0.02	3.01 ± 0.01	0.43 ± 0.03	200.01 ± 0.04	100.1 ± 0.01	18 ± 0.01	32 ± 0.01	10 ± 0.1	14 ± 0.02
F6	3.80 ± 0.02	2.99 ± 0.02	0.42 ± 0.01	200.12 ± 0.03	100.3 ± 0.05	19 ± 0.01	85 ± 0.01	8 ± 0.2	15 ± 0.02
F7	3.76 ± 0.02	3.03 ± 0.01	0.40 ± 0.02	199.98 ± 0.01	100.4 ± 0.01	18 ± 0.03	26 ± 0.01	27 ± 0.2	14 ± 0.01
F8	3.75 ± 0.01	3.00 ± 0.01	0.39 ± 0.01	200.00 ± 0.02	99.9 ± 0.02	14 ± 0.01	20 ± 0.01	42 ± 0.1	10 ± 0.02
F9	3.74 ± 0.02	3.01 ± 0.02	0.39 ± 0.01	200.02 ± 0.01	100.6 ± 0.01	19 ± 0.01	98 ± 0.01	25 ± 0.1	12 ± 0.01

*Each value represents mean ± S.D (n=3)

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