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FORMULATION AND EVALUATION OF FAST DISSOLVING TABLETS OF LACIDIPINE SOLID DISPERSIONS

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ABSTRACT

The purpose of the present research was to formulate and evaluate patient-friendly fast dissolving tablets of lacidipine solid dispersion using direct compression method so as to achieve faster drug dissolution. In the current investigation, an attempt was done to initiate the rapid release of lacidipine from oral tablet dosage formulations through change of drug into solid dispersion form by solvent evaporation method using carriers in different proportions with subsequent formulation of optimum lacidipine solid dispersions into fast dissolving tablets by direct compression method using superdisintegrants. The developed lacidipine solid dispersions were evaluated for percentage practical yield and *in-vitro* drug release. Fast dissolving tablets of lacidipine solid dispersion were further analysed for pre-compression as well as post-compression characteristics. Depending upon the results obtained for *in vitro* drug release studies, it was found that the formulation F3 & F9 showed faster drug release profile of about 99.51% in 30 min & 99.51% in 30 min and disintegration time 40 sec & 40 sec, respectively compared to other developed formulations. The preliminary dissolution rate was found to be 34.25% / 10 min & 34.25% / 10 min, respectively for the best formulations F3 and F9. FT-IR graphs showed that there was no interaction between drug & excipients in the formulations. The present investigation explored the possibility for the faster dissolution of lacidipine solid dispersion based fast dissolving tablets developed by direct compression technique.

Keywords: Lacidipine, solid dispersion, fast dissolving tablets, superdisintegrant, % practical yield, *in vitro* drug release

INTRODUCTION

Oral route of drug administration is the most conventional route for the drug delivery. Solid dosage forms such as tablets and capsules have been prevalent due to ease of administration, dose accuracy, non-invasive nature and greater patient compliance. The oral bioavailability of poorly aqueous soluble drugs is mainly limited by its rate of dissolution, which is further controlled by surface area available for dissolution. The greater the surface area, the greater will be the rate of dissolution. As surface area improves with decrease in particle size, conventional techniques such as grinding, trituration, micronization using fluid energy mill, ball milling, precipitation and salt formation can be applied to enhance the dissolution rate of poorly aqueous soluble drugs. Yet, there are practical limitations with such approaches and the preferred oral bioavailability may not be achieved. Hence, various formulation approaches are being developed in order to improve the oral bioavailability of poorly aqueous soluble drugs. Amongst them, one of the formulation approaches is to formulate solid dispersion of active pharmaceutical ingredient. The method of solid dispersion has been widely accepted and popular means to improve aqueous solubility, rate of dissolution as well as successively the oral bioavailability of poorly aqueous soluble drugs **[1-3]**. Lacidipine is a vaso-selective long acting dihydropyridine calcium channel blocker. It applies antihypertensive action by blocking Ca^{+2} ions influx via voltage gated L-type calcium channels to coronary smooth muscle cells & myocardial cells. Therefore, produces dilatation of vascular endothelium, reduce peripheral resistance, as well as blood pressure **[4]**. It is rapidly but poorly absorbed orally; bioavailability is reduced due to first pass metabolism. Oral bioavailability is about 10% due to hepatic first pass metabolism (low bioavailability). It is widely distributed in a protein bound form. It is highly protein-bound (more than 95%). Excreted mainly through bile and (approx. 70%) of administered dose is eliminated as metabolites in the faeces and small amount is excreted through urine. Lacidipine belongs to BCS Class II drugs which has low solubility and high permeability. For BCS class II drugs, rate limiting step is the dissolution. Development of solid dispersions of poorly aqueous soluble drugs surpassed the drawbacks of the conventional approaches.

The present study is chiefly focused on the development and evaluation the fast dissolving tablets of lacidipine using its solid dispersions by direct compression method. In the current investigation, an

attempt was done to initiate the rapid release of lacidipine from oral tablet dosage formulations through change of drug into solid dispersion form by solvent evaporation method using carriers in different proportions with subsequent formulation of optimum lacidipine solid dispersions into patient-friendly, fast dissolving tablets by direct compression method using superdisintegrants in order to facilitate facilitate rapid disintegration followed by dissolution and improved patient compliance.

MATERIALS AND METHODS

Lacidipine was received as a gift sample from Aurobindo Pharma Ltd., Hyderabad. Crosscarmellose sodium, crospovidone and sodium starch glycolate were procured from Ciron Drugs & Pharmaceuticals, Palghar. Poly ethylene glycol 6000 and β-cyclodextrin were purchased from Qualikems Fine Chem., Vadodara and Finar Chemicals Limited. Magnesium stearate was procured from Loba Chemie, Tarapur. Talc & mannitol were obtained from Oxford Laboratory, Mumbai & Himedia Laboratory, Nashik, respectively. Sodium saccharin and microcrystalline cellulose were procured from Shree Sai Enterprise, Gujarat.

Pre-frmulation studies

Drug-excipient compatibility study

Fourier Transform Infra-Red (FT-IR) analysis [5]

An FT-IR spectrophotometer was employed for testing the samples. About 4 mg - 5 mg of test sample was blended with dry potassium bromide & the sample was analysed at the transmission mode of 4000-400 cm^{-1} wave number range **[6]**.

Formulation development

UV scan spectrum of lacidipine

UV absorption spectrum of lacidipine was determined in phosphate buffer solution, pH 6.8 containing surfactant by scanning of sample solutions in wavelength range of 200 nm - 400 nm at 1 cm path length. Lacidipine showed highest λ_{max} at 284 nm wavelength.

Calibration of standard graph of lacidipine solid dispersion

Lacidipine solid dispersion equivalent to 4 mg of lacidipine was weighed accurately and further dissolved in phosphate buffer solution, pH 6.8 (100 ml) containing a surfactant, in a 100 ml volumetric flask. Aliquot dilutions were made from the stock solution made in order to obtain 10 µg/ml, 20 µg/ml, 30 µg/ml, 40 µg/ml, 50 µg/ml and 60 µg/ml concentrations, respectively. The absorbance values of each solution were determined in triplicate by UV-visible spectrophotometer at the highest wavelength (λ_{max}) of 284 nm using phosphate buffer solution, pH 6.8 containing surfactant (Tween 20) as blank.

Preparation of lacidipine solid dispersions

Lacidipine solid dispersion formulations were developed by solvent evaporation method utilizing polyethylene glycol 6000 & β-cyclodextrin in combination (50:50) as carriers which are highly hydrophilic in nature in various proportions (drug: carrier ratios - 1:1, 1:2, 1:3, 1:4, 1:5 and 1:6, At first, the physical blend of polyethylene glycol 6000 & β-cyclodextrin in combination (50:50) was dissolved in a china dish comprising of sufficient volume of ethanol Ethanol was made to evaporate in a vacuum oven at a temperature not more than 45 ^{o}C. Subsequently obtained lacidipine solid dispersion was subjected to size reduction in a mortar with aid of a pestle, placed aside in a vial & further stored in desiccators till its further usage.

Preparation of fast dissolving tablets of lacidipine solid dispersions by solvent evaporation method [7]

All ingredients used in the formulation of of fast dissolving tabelts of lacidipine solid dispersions were passed through sieve # 60 with subsequent mixing in geometric fashion. The uniformly blended mixture was further subjected to compression process using Secor tablet compression machine (8 mm diameter, punches flat-faced) in order to make 150 mg tablets. A total of 10 formulations were prepared & composition of formulations was mentioned in **Table 1**.

Table 1: Formulation of different batches of lacidipine solid dispersion and lacidipine fast dissolving tablets

Ingredients	F1 (mg)	F2 (mg)	F3 (mg)	F4 (mg)	F5 (mg)	F6 (mg)	F7 (mg)	F8 (mg)	F9 (mg)
Lacidipine SD equivalent to lacidipine (4mg)	20	20	20	20	20	20	20	20	20
Crosscarmellose sodium	05	10	15	--	--	--	--	--	--
Sodium starch glycolate	--	--	--	05	10	15	--	--	--
Crospovidone	--	--	--	--	--	--	05	10	15
Sodium saccharin	01	01	01	01	01	01	01	01	01
Flavour	02	02	02	02	02	02	02	02	02
Magnesium stearate	01	01	01	01	01	01	01	01	01
Talc	02	02	02	02	02	02	02	02	02
Mannitol	35	35	35	35	35	35	35	35	35
Microcrystalline cellulose	84	79	74	84	79	74	84	79	74
Total(mg)	150	150	150	150	150	150	150	150	150

Evaluation of fast dissolving tablets of lacidipine solid dispersions

Pre-compression analysis

Angle of repose

It was measured by fixed funnel method in which, a funnel was mounted vertically to the stand at a height of 6 cm. The sample powder (5 g) was poured into the funnel by closure of the open funnel end portion with the thumb, and later took off thumb. The maximum height of powder heap (h) formed was noted down. The radius of heap

(r) was calculated and lastly, the angle of repose (θ) value was computed utilizing the formula **[8, 9]**.

$\theta = \tan^{-1}(h/r)$ in which, θ = angle of repose

Bulk density

In order to determine the powder bulk density, weighed amount of powder (passed through standard sieve # 40) was poured into a measuring cylinder and the initial (height) volume of powder (also known as bulk volume) was noted down. Powder bulk density was then computed using below given formula. **$D_b = M/ V_b$**

In which, D_b = bulk density (expressed in terms of g/cm^3), M = mass of the powder taken, V_b = bulk volume of the powder.

Tapped density

It was found for a known mass of powder blend (M) placed in a measuring cylinder. Further, it was tapped for 100 tappings (fixed time). The minimum volume (V_t) occupied by the powder blend in measuring cylinder was noted[9]. Tapped density (ρ_t) was calculated by using the formula; **$D_t = M / V_t$**

In which, D_t = tapped density (expressed in g/cm^3),

M = mass of powder taken and V_t = tapped volume of powder blend

Carr's index or % compressibility [10, 11]:

The Carr's index values represents the flow characteristics of powder mixture and was calculated as,

Carr's index = $(D_t - D_b)/ D_t$ x 100

D_t = tapped density of powder & D_b = bulk density of powder.

Hausner's ratio

It is an indirect indicator of ease with which powder flow & calculated using the below mentioned formula **[12]**,

Hausner's ratio = D_t/ D_b

In which, D_t = tapped density of powder, D_b = bulk density of powder

Lower Hausner's ratio (<1.25) symbolizes better flow characteristics in comparison to higher ones (>1.25).

Post-compression analysis

Physical appearance

Features related to physical appearance of tablets such as tablet shape, surface texture, colour, embossing, smoothness, debossing, cracks, chipping etc. was noted down.

Tablet dimensions – thickness and diameter

Thickness and diameter of the developed tablets was determined from each formulation utilizing a Vernier calliper, mentioned as average thickness in terms of mm**.**

Test for weight variation

Adequate quantity of tablets was selected randomly from each tablet formulation and weighed individually to examine for weight variation **[13]**.

Tablet hardness

It is the force applied through the diameter of tablet for its breakage. Resistance of

tablets pertaining breakage, chipping or abrasion under the conditions of handling, transportation, and storage before use depends on its hardness. Tablet hardness or crushing strength was found for each formulation using Strong Cobb hardness tester **[14]**.

Friability test

It was done utilizing Roche friabilator apparatus to check the influence of shocks & friction, that can result in tablet capping, chipping, or breakage. Pre-weighed sample of developed tablets were placed in plastic chamber of friabilator which revolves at 25 rpm speed for a duration of 4 min. Then, the tablets were allowed to drop from 6 inches distance with each revolution. After completion of friability test, the tablets were de-dusted & weighed again. The compressed tablets should not lose more than 1% of their initial weight.

% Friability = Initial weight of the tablets – Final weight of the tablets / Initial weight of tablets x 100

Drug content

Three tablets were selected randomly, weighed and then finely powdered. A quantity of the powder equivalent to one tablet was added to 100 ml of phosphate buffer, pH 6.8 containing surfactant in a conical flask. The conical flask was then kept on a rotary shaker. An aliquot of the solution was subjected to centrifugation and the supernatant was filtered through a 0.22 μm filter. The absorbance of the resultant solution was measured using UV - visible spectrophotometer at the λ_{max} of 284 nm against phosphate buffer, pH 6.8 containing surfactant as blank. Concentrations as well as the amount of lacidipine contained per tablet was determined using calibration curve.

***In- vitro* disintegration test**

In-vitro disintegration time for the developed fast dissolving tablet formulations of lacidipine solid dispersions was determined using USP disintegration test apparatus (Lab India). The disintegration medium used was phosphate buffer solution (900 ml) pH 6.8 containing tween 20 and it was maintained at a temperature of 37 °C ± 2 °C. Three tablets were randomly chosen from each formulation for *in-vitro* disintegration time measurement. The time taken for the whole disintegration of tablet with no palpable mass left out in the disintegration test apparatus was noted down.

***In-vitro* dissolution studies**

In-vitro dissolution study for the developed fast dissolving tablets of allopurinol solid dispersion was performed using type II (paddle type) USP dissolution testing apparatus" at a stirring speed of 50 rpm and a temperature of 37 °C ± 0.5 ° in pH 6.8 phosphate buffer solution. At each specified time intervals, 5 ml of sample was withdrawn with replacement by fresh dissolution medium. Samples were

analyzed by UV- visible spectrophotometer at 250 nm against the blank. The percentage drug release was calculated using an equation obtained from the calibration curve. The *in vitro* drug release studies were conducted in triplicate and the graph was plotted considering mean values of drug release with respect to time.

RESULTS AND DISCUSSION

Pre-formulation studies of lacidipine

Drug-excipients compatibility studies

The compatibility studies were performed to check any kind of incompatibility problems among drug and other excipients used in preparation of fast dissolving tablets of lacidipine solid dispersions.

Interpretation of lacidipine

FT-IR studies were performed to know the possible interactions between model drug lacidipine; carriers (PEG 6000 and β-cyclodextrin in combination) & other excipients. FT-IR of spectra of drug with carriers and other excipients showed similar peaks as that of lacidipine pure drug. Based on FT-IR spectra obtained, it was evident that there was no significant interaction of lacidipine with other excipients used in formulation **(Figure 1, 2)**.

Inference: FT-IR studies carried out to assess the probable incompatibilities between lacidipine and carriers - polyethylene glycol 6000 & β-cyclodextrin in combination. FT-IR graph of lacidipine showed the peaks at 3345.61cm^{-1} (-NH), 2979.39 cm^{-1} (-CH-, -C=O), 1671.53 cm^{-1} (-C=C, -OH) and 1493.95 cm^{-1} (RCOOR'). The physical mixture of lacidipine with the carriers in combination clearly showed the retention of characteristic peaks of drug, therefore, it can be concluded that there was no interaction between lacidipine and the carriers.

Formulation development

Standard curve of lacidipine solid dispersion (Table 3)

The calibration graph of lacidipine solid dispersion was plotted in phosphate buffer solution, pH 6.8 containing surfactant as highlighted in **Figure 3**. The absorbance of the solutions was measured using UV-visible spectrophotometer at the maximum wavelength of 285 nm. Lacidipine concentrations & absorbances followed a linear relationship and the correlation coefficient (R^2) value in phosphate buffer solution, pH 6.8 containing surfactant (tween 20) was observed to be 0.999.

Lacidipine solid dispersion formulations were developed by solvent evaporation technique. Fast dissolving tablets of allopurinol solid dispersion were prepared by sublimation technique using sodium starch glycolate & crospovidone as superdisintegrants as well as camphor & ammonium bicarbonate as subliming agents. A total of ten formulations were prepared (F1, F2, F3, F4, F5, F6, F7, F8, F9

and F10). The developed FDTs were subjected to pre-compression as well as post-compression analysis and the results were represented in **Table 5 & 6**, respectively.

The powder blends of different formulations were evaluated for bulk density, tapped density, Carr's index, angle of repose & Hausner's ratio and the values obtained were depicted in **Table 4** . The bulk density values were found to be 0.38 g/cc ± 0.03 to 0.55 g/cc ± 0.06. The tapped density values were observed to be in the range of 0.43 g/cc ± 0.09 to 0.66 g/cc ± 0.01. The Carr's index values were found to be 1.53 ± 0.04 to 30.27 ± 0.05. The angle of repose values was observed to be below 30^{o} and Hausner's ratios were found to be less than 1.52, which suggested that the formulations of solid dispersion powder blends of lacidipine prepared by solvent evaporation technique had passable flow properties.

The tablets were subjected to post-compression analysis including physical appearance, tablet dimensions–thickness and diameter, weight variation, friability, hardness as well as drug content. The developed FDTs of all the ten formulations were observed to be in the slight off white colour, round, flat in shape and smooth in texture. The values of thickness and diameter for the ten formulations were observed to be 0.5 mm ± 0.2 and 1.2 mm ± 0.1, respectively. The results of weight variation test for all the formulations of FDTs were found to be within the acceptable limits. Hardness values for the prepared formulations were in 2.6 ± 0.05 kg/cm^2 to 3.3 ± 0.20 kg/cm^2 range. The % friability was observed in the range of 0.50% ± 0.02 to 0.75% ± 0.06 and the values of drug content in the range of 95.75% ± 0.01 to 99.38% ± 0.01. The results obtained indicate denoted that the developed FDT formulations passed the tests for % friability as well as drug content. Drug content in the formulations was found to be in the range of 88.98% ± 1.28 to 98.25% ± 1.56. According to the pharmacopoeial standards the dispersible tablet must disintegrate within 3 min. All formulated batches have shown less disintegration time i.e. 40 sec ± 1.33 to 114 sec ± 1.28 indicating suitability of formulation for fast dissolving tablet.

In-vitro drug release studies

In vitro drug release study was carried out for 60 min. The cumulative percentage drug release from F1 to F4 formulations was observed to be 75.09%, 81.20%, 83.57%, 87.36%, respectively **(Table 6 & Figure 4)** and for F5 to F8 formulations was found to be 89.70%, 90.96%, 99.32%, 99.51%, respectively. For the formulation F9 it was 83.61% in which combination of subliming agents – camphor and ammonium bicarbonate were utilized. For the formulation F10, 49.43 % of % drug release was observed at the end of 60 min.

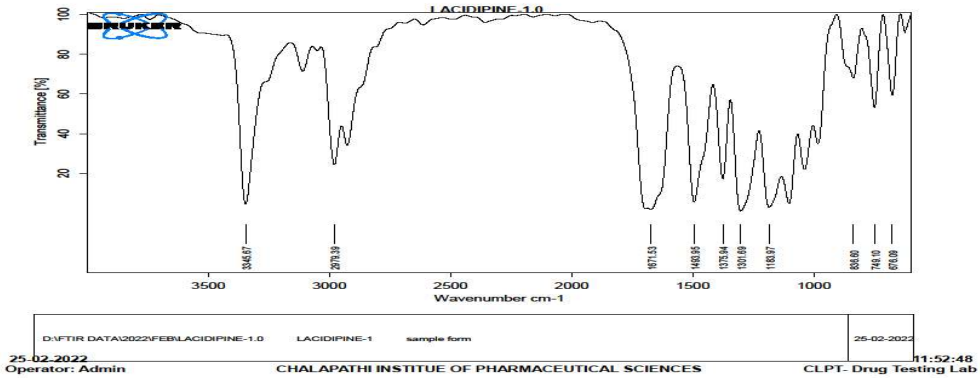

Figure 1: FT-IR spectra for lacidipine

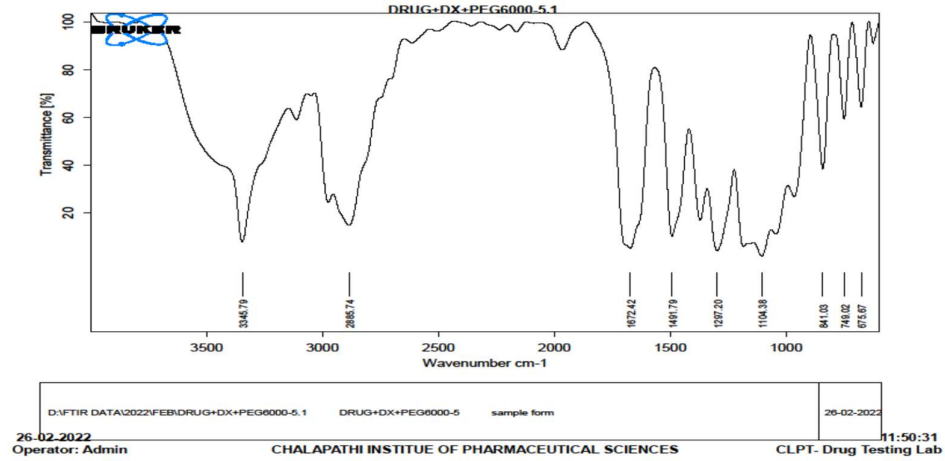

Figure 2: FT-IR spectra for lacidipine + PEG 6000 + β-cyclodextrin

Table 2: FT-IR spectra interpretation of lacidipine pure drug

S. No.	Functional group(s)	Wave number (cm^{-1})	
		Pure drug (Lacidipine)	Lacidipine +PEG 6000 + β-cyclodextrin
1	-NH	3345.61	3345.79
2	-CH-, -C=O	2979.39	2885.74
4	-C=C, -OH	1671.53	1672.42
5	RCOOR’	1493.95	1491.79

Table 3: Standard calibration graph of lacidipine solid dispersion

Concentration (µg/ml)	Absorbance at 285 nm (in phosphate buffer solution, pH 6.8) containing surfactant
0	0.000
10	0.165 ± 0.25
20	0.321 ± 0.15
30	0.473 ± 0.17
40	0.645 ± 0.25
50	0.799 ± 0.20
60	0.975 ± 0.15

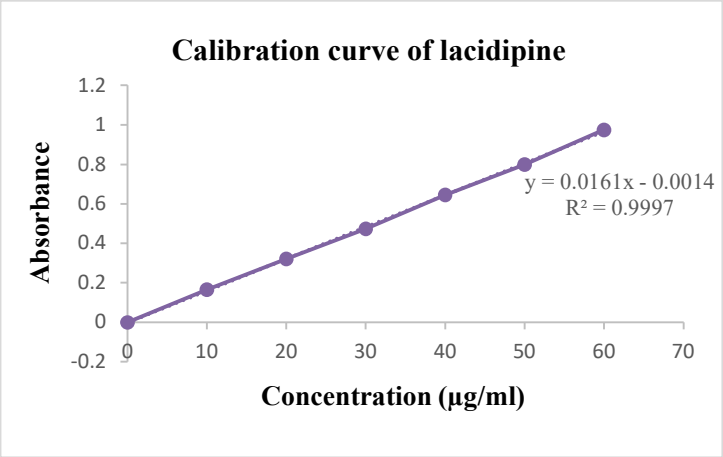

Figure 3: Standard calibration graph of lacidipine solid dispersion in phosphate buffer solution, pH 6.8 containing surfactant at λ_{max} of 285 nm

Table 4: Pre-compression analysis of solid dispersion based lacidipine fast dissolving tablet formulations

Formulation	Angle of repose (°)	Bulk density (g/cm^3)	Tapped density (g/cm^3)	Carr's Index	Hausner's ratio
F1	30.58 ± 0.25	0.38 ± 0.02	0.46 ± 0.08	17.39 ± 0.12	1.21 ± 0.02
F2	28.72 ± 0.37	0.39 ± 0.04	0.47 ± 0.02	17.02 ± 0.20	1.20 ± 0.06
F3	27.45 ± 0.26	0.36 ± 0.07	0.43 ± 0.06	16.27 ± 0.15	1.19 ± 0.03
F4	26.58 ± 0.39	0.37 ± 0.06	0.44 ± 0.02	15.90 ± 0.10	1.18 ± 0.02
F5	29.84 ± 0.22	0.37 ± 0.04	0.45 ± 0.03	17.07 ± 0.15	1.16 ± 0.06
F6	27.98 ± 0.27	0.35 ± 0.06	0.42 ± 0.02	16.66 ± 0.22	1.20 ± 0.02
F7	25.60 ± 0.30	0.37 ± 0.04	0.44 ± 0.04	15.90 ± 0.08	1.19 ± 0.08
F8	24.07 ± 0.19	0.40 ± 0.05	0.45 ± 0.08	14.89 ± 0.04	1.13 ± 0.02
F9	26.15 ± 0.30	0.35 ± 0.06	0.42 ± 0.05	16.66 ± 0.40	1.20 ± 0.04
F10	27.32 ± 0.33	0.36 ± 0.04	0.43 ± 0.04	16.27 ± 0.22	1.19 ± 0.06

Note: Mean ± S.D. of three determinations

Table 5: Results of post-compression analysis of fast dissolving tablets of lacidipine solid dispersion formulations

Formulation	Hardness (Kg/cm^2)	Friability (%)	Drug content (%)	*In vitro* disintegration time (sec)
F1	3.12 ± 0.15	0.70 ± 0.03	80.11 ± 0.65	94 ± 1.52
F2	3.20 ± 0.20	0.50 ± 0.01	82.34 ± 0.77	65 ± 1.00
F3	3.51 ± 0.03	0.63 ± 0.02	95.52 ± 0.55	41 ± 1.24
F4	3.13 ± 0.02	0.73 ± 0.03	82.58 ± 0.62	175 ± 1.80
F5	3.31 ± 0.15	0.66 ± 0.07	83.75 ± 0.70	148 ± 1.78
F6	3.35 ± 0.20	0.59 ± 0.06	85.91 ± 0.40	90 ± 1.32
F7	3.08 ± 0.09	0.71 ± 0.03	87.99 ± 0.63	71 ± 2.00
F8	3.26 ± 0.16	0.64 ± 0.07	90.50 ± 0.75	58 ± 1.78
F9	3.33 ± 0.19	0.55 ± 0.06	96.85 ± 0.50	36 ± 1.32
F10	2.66 ± 0.10	0.65 ± 0.08	43.32 ± 1.57	196 ± 1.40

Note: Mean ± S.D. of three determinations

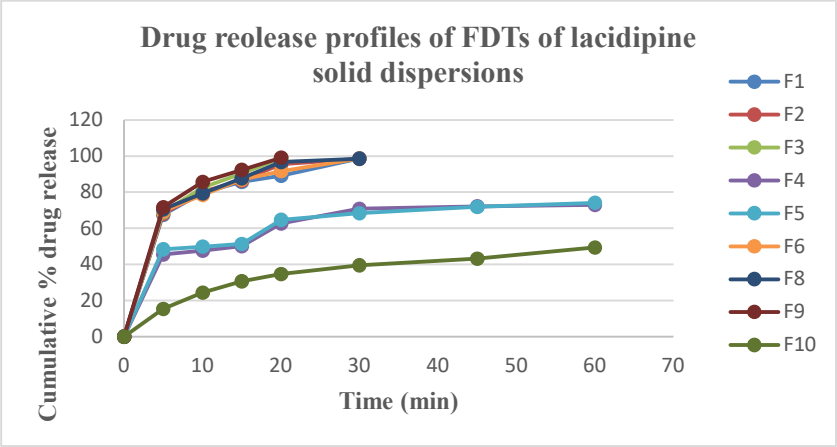

Figure 4: Drug release profiles of fast dissolving tablets of lacidipine solid dispersion (F1 - F9) and lacidipine FDTs (F10)

Table 6: *In-vitro* release studies of developed fast dissolving tablet formulations of lacidipine solid dispersions & lacidipine

Time (min)	F1 (%)	F2 (%)	F3 (%)	F4 (%)	F 5 (%)	F6 (%)	F7 (%)	F8 (%)	F9 (%)	F10 (%)
0	0	0	0	0	0	0	0	0	0	0
5	67.50 ± 0.36	67.95 ± 0.24	68.90 ± 0.24	45.52 ± 0.34	48.35 ± 0.45	55.77 ± 0.25	69.54 ± 0.20	70.50 ± 0.32	71.67 ± 0.67	15.46 ± 0.20
10	79.62 ± 0.25	80.20 ± 0.45	82.44 ± 0.36	47.75 ± 0.45	49.88 ± 0.20	60.25 ± 0.45	78.56 ± 0.42	79.35 ± 0.56	85.60 ± 0.58	24.37 ± 0.15
15	85.70 ± 0.81	86.56 ± 0.69	90.30 ± 0.15	50.23 ± 0.30	51.40 ± 0.33	66.89 ± 0.50	86.95 ± 0.74	87.69 ± 0.27	92.25 ± 0.36	30.62 ± 0.50
20	89.23 ± 0.42	95.50 ± 0.20	98.85 ± 0.70	62.74 ± 0.49	64.63 ± 0.75	70.60 ± 0.71	91.66± 0.53	96.70 ± 0.19	99.11 ± 0.25	34.73 ± 0.32
30	98.75 ± 0.57	98.55 ± 0.85	-	70.80 ± 0.62	68.26 ± 0.54	71.71 ± 0.13	98.60 ± 0.65	98.49 ± 0.70	-	39.52 ± 0.15
45	-	-	-	72.16 ± 0.54	71.91 ± 0.69	73.35 ± 0.64	-	-	-	43.27 ± 0.70
60	-	-	-	72.95 ± 0.15	74.10 ± 0.80	74.90 ± 0.22	-	-	-	49.43 ± 0.55

CONCLUSION

Fast dissolving tablets of lacidipine solid dispersions were successfully developed. Solid dispersions of lacidipine were prepared by solvent evaporation method using PEG 6000 and β-cyclodextrin in combination as carriers in various proportions. Percentage practical yield and dissolution study were performed for the developed formulations. Based on the results obtained, SD4 was considered the best formulation among the developed formulations. Fast dissolving tablets of lacidipine solid dispersions were prepared by direct compression method using croscarmellose sodium, sodium starch glycolate, and crospovidone as super disintegrants in different proportions. Based on the results of *in vitro* drug release studies performed for the developed fast dissolving tablets of lacidipine solid dispersion formulations, F3 and F9 were considered the best formulations. For formulations F3 and F9, in which the carrier used was croscarmellose sodium and crospovidone, respectively have shown the maximum percentage of drug release within 20 min i.e., 98.85% and 99.11%, respectively. The developed fast dissolving tablets disintegrated within few seconds without water requirement. Therefore, the current research work demonstrated the potential for faster disintegration, followed drug dissolution which further lead to enhanced patient compliance.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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